CERTIFICATE

This is to certify that this dissertation work on **"SWASA KAASAM"** has been carried out by **Dr.N.T.PARTHIBAN** during the year 2010-2013 in the **Post Graduate Department of Maruthuvam, Government Siddha Medical College, Chennai-600106** under my guidance and supervision in partial fulfillment of regulation laid by **The Tamilnadu Dr. M.G.R Medical University, Chennai** for the *final M.D* **(Siddha) Branch I- MARUTHUVAM** examination to be held in **April 2013**.

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A STUDY ON

SWASA KAASAM

the dissertation Submitted by

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under the Guidance of

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Introduction

INTRODUCTION

"HEALTH IS A STATE OF COMPLETE PHYSICAL, MENTAL, AND SOCIAL WELL BEING AND NOT MERELY THE ABSENCE Of DISEASE OR INFIRMITY"
-Defined By Worldhealth Organisation

The siddha system of medicine is comprises of the physical, psychological and social health. It serves to the humanity for more than thousands of years in defeating diseases. The system is based upon certain never failing "LAWS OF NATURE" and human life, revealed and realised by the learned yogis who were called siddhars. Siddhars were of the concept of healthy soul can only be developed through a healthy body. So they developed methods and medication that are believed to strengthen their physical body and there by their souls.

"THE GLORY OF GOD IS TO CONCEAL A THING,
THE GLORY OF THE KING IS TO SEARCH IT OUT"

The siddha system is based on mei gnana thathuvam. In this system siddhars used thrithoda- panjapootham relativity theory for diagnosing and used panjapootha-arusuvai theory for treating the disease

"ÁÚôÀÐ ¯¼ø §¿¡ö ÁÕó¦¾ÉÄ¡ Ì õ
ÁÚôÀÐ ¯Ç§¿¡ö ÁÕó¦¾É î º¡Öõ
ÁÚôÀÐ þ É§¿¡ö ÅÃ¡¾Õô À
ÁÚôÀÐ º¡ ¨ Å ÁÕó¦¾ÉÄ¡§Á."

- ¾Õ ã Ä÷

Now a days, urbanization and industrialization cause more allergic disorders. Allergies are common group of disorders seen worldwide and their incidence at an alarming accelerating rate.

SWASA KASAM (bronchial asthma) is one among the allergic diseases. It's becoming a major health issues in many developing countries. Many factors have contributed to the rise of the problem of BRONCHIAL ASTHMA. Increasing air pollution, fast modernization and widespread construction work are some of the reason for the asthma thrives. Diet becoming more westernized, improvement in standard of living, decreased in exercise rates, more dust mites and more population have been blamed.

In India 5.1 estimated deaths per 100000 population which is revealed by WHO (2004). It constitutes 0.2% of all deaths and 0.5% of National Burden of Disease.

So I hope this is the right time to give a most excellent medicine for treating this serious illness with the herbo mineral preparation LINGA MAATHIRAI which is used for several years.

Apart from internal medication, yogic practice like pranayamas, and some other breathing exercises are most viable points of treatment. This is the only measure for preventing SWASA KASAM.

"À¼Ã¡ ½ ý ÁÉò ¦¾¡ Î õ §ÀÃ¡ ¾¼ì ¸¢ô
À¼Ã¡ ½ ý þÕì ¸¢ø À¼ÈôÀ¼Èô À¢ø ¨Ä
ÅÇ¢Â¢¨ É Å¡ í ¸¢ÅÂò¾¢ø «¼ì ¸¢ø
ÀÇ¢í ¦ ¸¡òÐì ¸¡Âõ ÀÆì ¸¢Ûõ À¢ï º¡õ"

-¾¢ÕÁó¾¢Ãõ

-

Aim & Objectives

AIM AND OBJECTIVE

AIM:

The aim of the dissertation Study is to analyze the disease **Swasa kasam,** both clinically and experimentally with the trial drug of **Linga Mathirai**.

OBJECTIVE:

1. To collect the literature of both siddha and modern aspects of the disease Swasa kasam .
2. To study the clinical course of the disease with observation on the etiology, classification, pathology, differential diagnosis, prognosis, complications and treatment by siddha aspect.
3. To have an idea about the incidence of the disease with age, occupation, economical status, habits, family history and climate conditions.
4. To expose the clinical diagnostic methods mentioned by Siddhars to know how the disease manifest due to the deranged mukkutram, pori pulangal, ezhu udal thathukkal.
5. To have detailed clinical investigations.
6. To have a clinical trial on the disease Swasa kasam with the siddha drug ***Linga Mathirai.***
7. To evaluate the
    - ❖ Chemical, (Qualitative and Quantitative)
    - ❖ Toxicological (Acute and Sub-acute)
    - ❖ Pharmacological (Bronchodilator and Antihistamine activity in Guinea pig)
    - ❖ Bio-Statistical analysis

To have the modern parameters to confirm the diagnosis and prognosis of the disease.

Review of Literature

Siddha Aspects

REVIEW OF LITERATURE

SIDDHA ASPECT

Siddha system of medicine embraces physical, mental and spiritual aspects of the patients. The diseases are classified into 4448 types in out ancient siddha litertures based on Vatha, Pitha and Kabha theory.

"நாளடா நாற்பத்து நாலு நூறு
நயமுடனே நாற்பத்து எட்டு ரோகம்"

- அகத்தியர் இரத்தினச் சுருக்கம் நாடி
(நோய் நாடல் திரட்டு - 1 - 335)

Yugi munivar describes Swasa kasam as one of the categorized classification of Erumal Noi. They have explained in detail, the ethiology, Pathology, Clinical Features, Diagnosis based upon Mukkutrams, Eight Diagnostic Methods of Siddha, Prognosis, Treatment and Preventive methods.

ERUMAL NOI:

Synonyms of Erumal Noi

- Kasam
- Eelai

Definition

According to siddha medicine erumal is a sound produced generally by smoke or dust entering the mouth and the nostrils. It is a sound produced while expelling the sputum.

Aetiology

According to Yugi Muni,

"பாணத்தால் பரமாக்கினி மிகுக்கையாலும்
பாரமா மாமிசங்கள் புசிக்கையாலும்

தாணத்தாற் சஞ்சாரந் தவிர்கையாலும்
சரிப்படாப் பதார்த்தங்கள் புசித்தலாலும்
தீணத்தாற் பொசியா மலிருக்கை யாலும்
சேயிழையார் மேலின்பஞ் சிதைவதாலும்
மாணத்தால் மாதுக்க மடைதலாலும்
மதத்தாலுஞ் சுவாசமது மருவுங் காணே”
“வேகின்ற வதிகமாம் புகையினாலும்
மீறுகின்ற பாணத்தால் மிக்குந்தானே”.

- யூகிவைத்திய சிந்தாமணி 800 (269)

- Excessive smoking
- More intake of cool drinks
- Starvation
- Excessive non vegetarian diet
- Improper diet
- Exposure to cold and chill air
- Excessive intake of kabha diet like ice cream, cool drinks etc.
- Inhalation of smoke, various fumes, pollen grains and dust particles
- Inhalation of irritating and obnoxious substances
- Any obstruction in the respiratory tract
- When food particles enter into the air passage.

Pararasa Segaram describes the Erumal Noi as,

“புகைமிகக் குடித்தலாலும் புரையெறிந்தாலும் போய் வந்
திகலவே நடக்கை யாலு மியம்புமுட் டணத்தினாலும்
தகைபசித் திருக்கை யாலுஞ் சலமலங் கழியா தாலும்
அகமுறப் பிராண வாயு வகன்றுமே னோக்குந் தானே
ஆனதோ ரையும் பித்து மதைவிளைத் திருமித் தள்ளிக்
கானமாங் குழலாய் கம்மிக் கனத்துறு மிடறுங் காதும்

தானது தினவா யன்னந் தன்னையு மறப்பித் தேதான்

ஊனமாங் காச நோய்வந் துறுமென உரைத்திடீரே".

- பாராசசேகரம், நான்காவது பாகம் (193)

It is described as,

- Excessive smoking
- Excessive walking
- Excessive heat
- Starvation
- Improper excretion of urine and feces

In Dhanvanthiri Vairhiyam, Erumal Noi is described as,

"அக்கினி மந்தந் தொண்டை யரிகுர லனம்வெ றுத்தல்
கக்கிய விருமல் தொண்டை காந்துதல் தினவுண்டாதல்
தொக்கினிற் சுரமுண்டாதல் சூடுள பதார்த்தந்தேட
லிக்குண காசரோக வுற்பவ மென்னலாமே"

- தன்வந்திரி வைத்தியம் (157)

- Loss of appetite
- Throat irritation
- Throat pain
- Avoidance of food
- Cough
- Pyrexia
- Desire to eat hot food substances

In Theraiyar Vagadam, Erumal Noi is described as,

"வந்திடும் வெள்ளோக்காளம் வாயது தித்திப்பாகும்
நொந்திடும் பிடரி மண்டை மந்தமும் மிளைப்பி னோங்கும்
முந்தவே தலைதா னொந்து சரீரமு முகமுங் குத்தும்
கந்தரத் தொண்டை நாசி கர கரன்றுடனே தும்மல்

தும்மலு மிருமலுந் தோன்றுங் காசநோய்
நன்மையாய் வியாதி தீர்ந்தொழிய நல்குவார்
செம்மையா யின்பரங் கிரியற் செல்வனார்
உம்மையா யொருபெரும் யோக மோதுவாரே”

- தேரையர் வகைடம் (66)

It is described as,

- Belching
- Sweet taste
- Loss of appetite
- Head ache
- Pain all over the body especially in neck and face
- Soreness of throat
- Irritation in the nose and throat
- Cough

Erumal Noi is described in Aavi Allikkum Amutha Murai Surukkam as,

- Burning sensation in the throat
- Cough with expectoration
- Haemoptysis
- Throat pain
- Vomiting
- Tiredness
- Nasal irritation
- Loss of weight
- Pain all over the body
- Head ache
- Flatulence

- Aavi Allikkum Amutha Murai Surukkam (384)

According to YugiMuni, Erumal Noi or Kasam is divided into 12 types.

"தானான காசமது பன்னிரண்டாகுந்
தாக்கான மந்தார காசந்தோடு
பானான பக்க மந்தார காசம்
பாங்கான சுடர்காசம் வாதகாசம்
பேனான பித்தமாங் காசத்தோடு
பேர்பெரிய சுவாசகாசத் தோடொக்க
ஏனான இரத்தமாங் காசத்தோடு
இரைப்பான சிலேத்ம காசத்தானாமே
ஆகின்ற பீனிசத்தின் சுவாசகாசம்
அழிவாத பித்தத்தின் காசமாகும்
போகின்ற பித்தசிலேத்தும காசந்தானே
புகழ்பெரிய தொந்தமாங் காசத்தோடு
தேகின்ற காசமது பனிரண்டாகும்
தெளிவாக பிதனுடைய செயலைக் கேளாய்
வேகின்ற வதிகமாம் புகையினாலும்
மீறுகின்ற பாணத்தால் மிகுக்குந்தானே"

- யூகிவைத்திய சிந்தாமணி 800 (269)

1. Manthara Erumal
2. Pakka Manthara Erumal
3. Chudar Erumal
4. Vali Erumal
5. Azhal Erumal
6. Swasa Erumal
7. Raththa Erumal
8. Iya Erumal
9. Peenisa Erumal
10. Vali Azhal Erumal

11. Azhal Iya Erumal
12. Mukkutra Erumal

Apart from these other types of irumal are ,

- Maruntheedu Erumal
- Kanja Erumal
- Kall Erumal
- Sura Erumal
- Kuruthi vaanthi Erumal

Swasa kasamis one among the 12 classified categories of Erumal Noi. The major symptoms are Cough with Expectoration, Dyspnoea, Throat Irritation and Nasal Irritaiton.

Yugi Muni describes Swasa kasamas,

"வண்மையாய்க் கோழைகட்டி இருமி விழும்
மாநாகம் போலவே வாங்குஞ் சுவாசம்
திண்மையாய்ச் செருமலுண்டா மடிக்க டிக்குச்
சீரணமிலாமலே வயிறு மூதும்
நன்மையாய் நாசியது தணல்போ லாகும்
நலிந்துடம்பு வற்றிவருங் குரலுங் கம்மும்
உண்மையா யுண்ணாக்கி லூறுங் கேணி
யுழந்துமே சுவாசகா சத்தினொப்பே".

- யூகி வைத்திய சிந்தாமணி 800 (272)

- Cough with expectoration
- Dyspnoea
- Throat irritation

- Indigestion
- Flatulence
- Nasal Irritation
- Loss of weight
- Change in Voice
- Excessive salivation

According to Siddhar Handwritten Script, Swasa kasamis described as,

"கட்டியே கோழை இருமவே வீழ்ந்து
கச்செவி சீறுதல் போல
முட்டியே மூச்சு வன்மையாய்ச் செருமி
மூக்கழல் எய்தியே யுடலம்
வற்றியே மெலிந்துண்ணாவரை நீரும்
வரட்சீ ரணமிகு வியர்வை,
கட்டி போல் வயிறு மூதிடிலிரைப்பா
மிருமலென்றோதுவர் காணே"

- நோய் நாடல் திரட்டு 11 (114)

It is described as,

- Cough with Expectoration
- Dyspnoea
- Loss of weight
- Loss of appetite
- Sweating
- Flatulence

According to Aavi Allikum Amutha Murai Surukkam, the signs of Swasa kasamare described as,

- Cough
- Fever with rigor
- Dyspnoea

- Head ache
- Flatualence
- Vomiting
- Constipation
- Sweating
- Excessive thirst

- Aavi Allikum Amutha Murai Surukkam (389)

In Rajavaidhya Pothini Erumal Noi is described as,

- Flatulence
- Indigestion
- Cough with expectoration
- Dryness of nasal region
- Hoarseness of voice
- Neuritis along the spinal region
- Dyspnoea
- Restlessness
- Lassitude

- Rajavaidhya Pothini (24)

DIFFERENTIAL DIAGNOSIS (NOI NITHANAM)

Manthara Erumal

- Rhinitis
- Sneezing
- Tightness of chest
- Dyspnoea
- Sweating in the face, ear and all over the body
- Cough with expectoration

Pakka Manthara Erumal

- Cough
- Tightness of chest
- Flatulence
- Rhinitis
- Dyspnoea
- Hoarseness of Voice
- All the symptoms varies with full and new moon days

Iya Erumal

- Dyspnoea
- Cough with expectoration
- Abdominal distension
- Weight loss
- Fever
- Vomiting
- Pain all over the body

Iya Eraippu Noi

- Dyspnoea
- Couth with expectoration
- Rhinitis
- Sweating
- Chest pain
- Fever and shivering all over the body
- All these symptoms ends in fatal condition

Eraippu Iya Noi

- Dyspnoea
- Cough with expectoration
- Tightness of chest
- Fever
- Giddiness
- Dryness of mouth
- Rhinitis

MUKKUTRA VERUPADUGAL

Our siddha system is based on the three humoral theory. The three humors of siddha medicine are called by different terminologies, namely Uyirthathu, Thosham, Kutrams. They are,

- Vali - Air and Space
- Azhal - Fire
- Iyam - Earth and Water

Each of them has different functions. Whey they are in equilibrium, a normal structural and physiological state of the body is ensured. When the humors are disturbed, it manifests a pathological state of the body.

"மிகினுங் குறையினும் நோய் செய்யும் நூலோர்
வளி முதலா வெண்ணிய மூன்று" (குறள்)

In Swasa Erumal, the factors such as diet, habit, environment etc., adversely influence on Iyam and Vali to cause this disease. The involvement of Udana vayu plays a vital role in the manifestation of signs and symptoms.

"கபத்தினை யன்றிக் காசசுவாசங் - காணாது"

- தேரையார் (நோய் நாடல் திரட்டு 1 340

MUKKUTRA VAERUPADUGAL :(Pathogenesis)

Disease occurs due to the derangement in

- Uyir thathukkal
- Udalthathukkal
- kala marupadu(seasonal changes)
- Thinai(living lands) and
- Udal vanmai.

UYIR THATHUKKAL:

Mukkutra Iyal :

The function of the three uyir thathus:

a) **Vali – (Kattru + Veli)**

b) **Azhal – (Thee)**

c) **Iyyam – (Neer+Mann)**

The alteration of three thathu in their reaction to extrinsic or intrinsic factors results in disharmony. This altered harmony and balance variation of the three thathus results in disease. Their natural ratio (1 :½:¼) to each other is discerned by the physician at the wrist and each nadi is individually assessed for its strength, speed and regularity.

The following poem describes the origin of three Uyir Thathus

"இருப்பான நாடி எழுபதோடீரா
யிரமான தேகத்தில் ஏலப் -பெருநாடி
ஒக்கத் தசமத் தொழிலை யூக்க தசவாயுக்கள்
தக்கபடியானதே சார்பு"

"சாருந் தசநாடி தன்னில் மூலம் மூன்று
பேருமிடமி பிங்கலையும் பின்னலுடன்- மாறும்
உரைக்கவிரற் காற்றொட்டுணர்த்து மேநாசி
வரைச்சுழி யோமையத்தில் வந்து"

"வந்தகலை மூன்றில் வாய்வாமபானனுடன்
தந்த பிராணன் சமானனும் சந்தமுறக்

கூட்டுறவில் ரேசித்தல் கூறும் வாதம் பித்தம்

நாட்டுங்கபமே யாம் நாடு”

- கண்ணுசாமியம்- பக்கம் 36

The three Thathus are manifested at the wrist and are individually and collectively assessed. These three humour are divided in to various types and have their functions specifically.

FUNCTIONS OF VALI:

“ஒழுங்குடள் தாதேழ்மூச் சோங்கி இயங்க

எழுச்சிபெற எப்பணியும் ஆற்ற - எழுந்கிரிய

வேகம் புலன்களுக்கு மேவச் சுறுசுறுப்பு

வாகளிக்கும் மாந்தர்க்கு வாயு”

- மருத்துவ தனிப்பாடல் பக்கம்12

According to the physiological function, vali is ten types. They are

S.NO	VATHAM	GENERAL FEATURES	CHANGES IN SWASA KASAM
1.	Piranan(Uyir Kaal)	Responsible for respiration and it is necessary for proper digestion	Affected
2.	Abanan(Kizhnokkumkaal)	Responsible for all downward forces such as voiding of urine, stools, semen, menstrual flow	Normal
3.	Viyanan(paravukaal)	Dwells in the skin and is concerned with the sense of touch... extension and flexion of the parts of the body and distribution, of the nutrients to various parts of the body	Affected
4.	Uthanan (melnokkukaal)	Responsible for all kinds of upward motion such as nausea, vomiting etc...	Affected
5.	Samanan(nadukkaal)	Considered essential for proper digestion, assimilation and carries the digested nutrients to each and every organ	Affected
6.	Nagan	Helps in opening &closing of eyelids	Normal
7.	Koorman	Responsible for vision, lacrimation and yawning	Normal
8.	Kirugaran	Induces appetite, salivation, all secretions in the body including nasal	Affected

		secretion and sneezing	
9.	Thevathathan	Induces and stimulates a person to become alert, get anger, to quarrel, to sleep etc	Affected
10.	Dhananjeyan	Resides in the cranium and produces bloating of the body after death. This leaves from the body after 3days of death, forming a way through the skull.	-

In Swasa kasam, Prananan, uthanan, Viyanan,,kirugaran, devathathan will be mainly affected.

FUNTIONS OF AZHAL:

"பசிதாகம் ஓங்கொளிகண் பார்வைபண் டத்து
ருசிதெரி சத்தி வெம்மை வீரம் - உசித
மதிகூர்த்த புத்திவனப் பளித்துக் காக்கும்
அதிகாரி யாங்கா னழல்"

- மருத்துவ தனிப்பாடல் பக்கம்16

Azhal is functionally divided in to five types. They are

S.NO	PITHAM	NORMAL FEATURES	CHANGES IN SWASA KASAM
1.	Anarpitham(Akkuanal)	Peps up the appetite and aids in digestion.	Affected
2.	Ranjagapitham(Vanna eri)	Responsible for the color and contents of blood.	Normal
3.	Sathagapitham(Attralangi)	Controls the whole body and is held responsible for fulfilling a purpose.	Affected
4.	Pirasagapitham(Ollolithee)	Dwells in the skin and concerned with the shine, glow, texture and its complexion	Normal
5.	Alosagapitham(Nokku Azhal)	Responsible for the perception of vision.	Normal

In Swasa kasam, Anila pitham, Sathaga pitham will be mainly affected

FUNTIONS OF IYAM:

"திடமீயு மென்பிணைப்புத் திண்மையுற்ற யாப்பும்

அடலேர் வழுவழுப்பும் ஆக்கைக் - கிடர்க்கு

வெருவாப் பொறுமையும் மேலான காப்பாம்

பெருமைத்தா மையமெனப் பேசு"

- மருத்துவ தனிப்பாடல் பக்கம்20

It is of five types. They are

S.NO	KABHAM	GENERAL FEATURES	CHANGES IN SWASA KASAM
1.	Avalambagam(Alli Iyyam)	Lies in the respiratory organs, exercises authority over other khapas and controls the heart and circulatory system.	Affected
2.	Kilethagam(Neerpi Iyyam)	Found in stomach as its seat, moistens the food, softens and helps to be digested.	Affected
3.	Pothagam(Suvaikanna Iyyam)	Hold responsible for the sensory perception of taste.	Normal
4.	Tharpagam(Niraivu Iyyam)	Presents in the head and is responsible for the coolness of the eyes, sometimes may be referred to as cerebrospinal fluid	Normal
5.	Santhigam(Ondri Iyyam)	Necessary for the lubrication and the free movements of joints.	Normal

In Swasa kasam, Avalambagam and kilethagam may be affected.

UDAL KOORUGAL (SEVEN PHYSICAL CONSTITUENTS):

"இரமிரத் தந்தசை நெய் நிணமென்பு மச்சைவீந்தென்றேழும் முறையே"

சரதமொடு மெய்மனத்து நிறைவுதரும்உயிருட்டுத்தாங்கி யிருக்கும்

உரமுதவும் மேடுபள்ளம் நிரவும் நெய்ப் பசையூட்டும் ஓங்கி நிறுத்தும்

பரந்தென்பின் துளைகடொறும் நிரம்பிடுங்கள் முளைதோன்றப் பண்ணும் தெரிவாய்"

-சித்த மருத்துவாங்கச் சுருக்கம் -பக்கம்334

The human body is made of seven basic physical constituents. These constituents should be in harmony and function normally. Any variation in them will lead to their functional deviations.

The Natural characters of the seven physical constituents

S.NO	UDAL KATTUGAL	GENERAL FEATURES	CHANGES IN SWASA KASAM
1.	Saaram (digestive essence)	Responsible for the growth& development. It keeps the individual in good temperament and it enriches the bood.	Affected
2.	Senneer (blood)	Responsible for the colour of blood and for the intellect, nourishment, strength, vigour and valour of the body.	Normal
3.	Oon (muscle)	Gives lookable contour to the body as needed for the physical activity. It feed the fat next day and gives a sort of plumpness to the body	Normal

4.	Kozhuppu (fat)	Lubricates the organs to facilitate frictionless functions.	Normal
5.	Enbu (bones)	Supports & protects the vital organs, gives the definite structure of the body and responsible for the posture and movements of the body	Normal
6.	Moolai (bone marrow)	Nourishes the bone marrow and brain which is the centre that controls other systems of body	Normal
7.	Sukkilam/ Suronitham(sperm/ ova)	Responsible for reproduction	Normal

THE VARIATIONS OF THE PHYSICAL CONSTITUENTS:

1. SAARAM

Increased Saaram:Leads to diseases of increased kapham like indigestion Etc

Decreased Saaram : Leads to loss of weight, tiredness, lassitude, dryness of the skin and diminished activity of the sense organs.

2. SENNER

Increased Senner : Causes boils in different parts of the body throbbing pain, anorexia, mental disorder, splenomegaly, Colicky pain., increased blood pressure, reddish eye and Skin, jaundice, haematuria etc.

Decreased Senner : Leads to anaemia, tiredness, neuritis and lassitude, Pallor of body.

3. OON

Increased Oon : Oon in excess causes cervical lymph adenitis, venereal ulcer, tumour in face, abdomen, thigh genitalia etc are the signs of increased Oon

Decreased Oon : Leads to impairment of sense organs, joints jaw, thigh and genitalia gets shortened

4. KOZHUPPU

Increased Kozhuppu: Identical to that of increased Oon associated with Dyspnoea and loss of acidity

Decreased Kozhuppu: Leads to pain in the hip region and diseases of the spleen

5. ENBU

Excess Enbu : Growth in bones and teeth

Decreased Enbu : Loosening of teeth and nails and Splitting and falling of hair

6. MOOLAI

Increased Moolai : Causes heaviness, swollen eyes, swollen phalanges, Oliguria and non healing ulcers

Decreased Moolai : Causes osteoporosis and sunken eyes

7. SUKKILAM / SURONITHAM

Excess Sukkilam/Suronitham : Causes lust towards women and cause Urinary calculus

Decreased Sukkilam/Suronitham : Causes failure in reproduction, pain in the genitalia.

KAALA MARUBADUGAL:
PARUVAKALAM (SEASONS):

According to ancient tamilians, the one year is divided in to six seasons and each season consists of two months and the year starts from Margazhi.

S.NO	KAALAM	TAMIL MONTHS	MUKKUTTRA MARUPAADUGAL
1.	Kaar Kaalam	Aavani & Purattasi Aug 16 To Oct15	*VATHAM*-Vettunilai Vazharchi *PITHAM*-Thanilai Vazharchi
2.	Koothir Kaalam	Iypasi &Karthigai Oct 16 To Dec15	*VATHAM*- Thanilai Vazharchi *PITHAM*- Vettunilai Vazharchi
3.	Munpani Kaalam	Margazhi & Thai Dec16 To Feb15	*PITHAM*- Thanilai Vazharchi
4.	Pinpani Kaalam	Masi& Panguni Feb16 To June15	*KABHAM*- Thanilai Vazharchi
5.	Elavenir Kaalam	Chithirai & Vaikaasi April16 To June15	*KABHAM*- Vettunilai Vazharchi
6.	Mudhuvenir Kaalam	Aani & Aadi June16 To Aug 15	*VATHAM*- Thanilai Vazharchi

THINAI (LAND):

Siddhars classified the lands in to five types. They are

1. Kurunchi - Mountain range
2. Mullai -Pastoral area of the forest
3. Marudham -The fertile river bed
4. Neidhal -The coastal region
5. Paalai - Arid desert

- The winter season gives good health to the man, early summer and latter rainy gives moderate health. Whereas early rainy and latter summer are more prone to diseases, that’s why siddhars called it as Aanaga kalam
- Marudha nilam is the fertile area where no disease occurs

RELATION BETWEEN MUKKUTRAM, KAALANGAL AND THINNAIGAL

MUKKUTRAM	PARUVAKALAM(SEASONS)			THINAI
	Thannilai vazharchi (Accumulation)	Vaetrunilai vazharchi (Aggravation)	Thannilai adaithal (Alleviation)	
VATHAM	Mudhuvenil kalam	Kaar kalam	Koothir kalam	Vatha disease is more prevalent in **Neidhal** land
PITHAM	Kaar kalam	Koothir kalam	Munpani	Pitha disease is more prevalent in **Mullai** land
KAPHAM	Pinpani	Elavenil kalam	Mudhuvenil kalam	Kaphadisease is more prevalent in **Kurunchi** land

UDAL VANMAI (IMMUNITY):

Siddhars classify Udal vanmai as three types. They are

1. Iyarkai vanmai
2. Kala vanmai
3. Seyarkai vanmai

PINIYARI MURAIMAI (DIAGNOSIS):

It means the method of diagnosing the disease.

"மதித்திடற்கருமை வாய்ந்த
மாண்பரிகாரமெல்லாந்
துதித்திட வுணர்ந்தானேனுந்
துகளறப் பணியின்றன்மை
பதித்திட வுணரானாகிற்
பயனுறானாகாலானே
விதித்திடு பிணித்திறத்தை
விளம்புது முதற்கண்மன்னோ"

- சிகிச்சா ரத்தினதீபம்- பக்கம் 3

The above poem describes that diagnosis is very important for the physician to treat the disease.

And,

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Four steps are followed in diagnosing the disease. They are,

a. Poriyaal arithal

b. Pulanal therthal

c. Vinaathal

d. Envagaithervu

In detail,

a. Poriyaal arithal:

In this the physician should carefully observe the changes that occur in the five sensory organs (Porigal) of the patient.

b.Pulanal therthal:

The physician carefully applies his five senses of perception, smell, taste, vision, touch and sound to understand the condition of the patient.

c.Vinaathal:

The physician should interrogate about the patients name, age, occupation,socio economic status, food habits, history of past illness, history of present illness, family history, marital status, menstrual history and frequency of pain.

ENVAGAI THERVUKAL

"நா நிறம் மொழி விழி மலமூத்திரம்

நாடி பரிசமிவை மருத்துவராயுதம்"

-நோய்நாடல் நோய் முதனாடல்-253

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Nowadays advanced diagnostic tools have been developed by modern bio-medical scientists. But Siddhars have given eight diagnostic methodological tools. They are called as Envagai thervu.

Eight fold system of clinical assessments:

Siddhars have given eight diagnostic methodological tools. They are,

1. Naa
2. Niram
3. Mozhi
4. Vizhi
5. Malam
6. Moothiram
7. Naadi
8. Parisam

GENERAL FINDINGS:

1. **NAA:**

   i. Signs and symptoms in the tongue are noted here.

   ii. Color, salivary secretion, ulcers, coating, inflammation, taste changes, deviation and its nature are generally noted.

In *Swasa kasam* the naa may be affected due to coated tongue

2. NIRAM:

The color of the skin is noted here.

In *Swasa kasam* the niram may be affected due to the pallor of the body.

3. **MOZHI:**

Character of the speech is noted, mainly uratha olli(high pitched), thazhntha olli(low pitched), or resembles the sound of any instrument.

In *Swasa kasam* the mozhi will be affected due to breathlessness.

4. VIZHI:

Character of the eye is noted. Color, Warm, Burning Sensation, Irritation, Visual Perception.

In *Swasa kasam* the vizhi may be pale.

5. MALAM:

The stools are examined for quantity; hardening (malakattu), loose motion (bethi), Color and smell.

In *Swasa kasam* the malam will be affected in elderly patients due to constipation.

6. **MOOTHIRAM:**

A. NEERKURI:

The urine is examined for its color, odour, volume, froth and weight.

In *Swasa kasam* the moothiram will not be affected.

B.NEIKURI

"அருந்து மாறி ரதமும் அவிரோதமதாய்
அக்கல் அலர்தல்அகாலவூன் தவிர்தழற்
குற்றளவருந்தி உறங்கி வைகறை
ஆடிக்கலசத் தாவியே காதுபெய்
தொருமுகூர்த்தக் கலைக்குட்படு நீரின்
நிறக்குறி நெய்குறி நிருமித்தல் கடனே"

-சித்த மருத்துவாங்கச் சுருக்கம் -

பக்கம்509

The early morning urine of the patient is analyzed by dropping a drop of gingely oil on the surface of the urine sample. The accumulation, formations, changes, and dispersal under the sunlight without any external disturbances of the urine sample can be noted.

- Vatha neer - The oil spreads like snake
- Pitha neer - The oil spreads like ring
- Kapha neer - The oil spreads like pearl
- If the oil spreads gradually, it indicates good prognosis
- If the oil spreads fast or gets mixed completely with urine or sinks in urine, it suggests bad prognosis.

Since *Swasa kasam* is due to the derangement of vatham and kapam,the neikuri will be vatha or kapa neer.

7. NAADI:

Naadi is a Unique Siddha Pulse reading method and it should be felt and not read. Different gaits of Vazhi , Azhal, Iyam like branching, jumping, mixing, rotating and compression can be identified.

NAADI NADAI:

IDENTIFICATION (FINGER)		**INDEX**	**MIDDLE**	**RING**
STRENGTH (IN UNIT)		1	1|2	1|4
PATTERN	**MALE**	Hen	Tortoise	Snake
	FEMALE	Snake	Frog	Swan

"பார்க்கவே பெண்களுக் கிடதுபக்கம்
பதிவாகப் பார்த்திடவே பகரபக்கேளும்
கார்கவே வாதமது சர்ப்பம் போலாய்
கனமான பித்தமது தவளை போலாஞ்
சேர்க்கவே யையமென்ற நாடிதானுஞ்
சிறுநடையா வன்னம் போற் செழிப்பாய்க் கானும்"

-பதிணென் சித்தர் நாடிசாத்திரம் (பரிபூரண நாடி)-பக்கம்2

In Swasa kasam patients following types of nadai are seen commonly;

- Iya naadi is increased.
- Vali iyam

8. PARISAM:

Observations as touch, temperature, sensory impairment, masses, nodes, swelling, and texture of the skin, pain, hardness, edematous, and dullness shall be noted.

In *Swasa kasam* the patients body is heat or cold is noted.

LINE OF TREATMENT:

1. Since *Swasa kasam* is a Kapha disease, Mild laxative is given to balance the Kapham.

2.MEDICINE:

❖ **For Treatment:**

I. Linga mathirai

- one tablet, Twice Daily.

- With Water.

3. DURATION OF TREATMENT:

48 ays medicine,

4. ADVICE:

- To follow good personal hygiene
- Avoid chill and cold weather
- To avoid exposure to dust, fumes and smokes
- To avoid smoking
- To find out allergen and avoid them
- Advise to practice pranayamam and yoga.

5. .Yoga practice

- Pujangasanam
- Sarvangasanam
- Patchimothasanam
- Salabasanam
- machasanam

6. PREVENTION:

- Balanced & Low fat diet
- Regular exercise
- Suriya namesakaram
- Oil bath twice in a week
- Avoid Junk foods
- Avoid tobacco, Alcohol

Modern Aspects

MODERN ASPECTS

ANATOMY OF RESPIRATORY SYSTEM:

The respiratory system is meant primarily, for the oxygenation of blood. Developmentally the respiratory system is an outgrowth from the ventral wall of the foregut.

The organs of respiratory system are nose, pharynx, larynx, trachea, two bronchi (one bronchus to each lung), bronchioles and smaller air passages, two lungs and their coverings-the pleura, muscles of respiration-the intercostal muscle and the diaphragm.

The upper respiratory tract includes the nose, nasopharynx, and larynx. It is lined with ciliated epithelium on their surfaces.

The lower respiratory tract includes the trachea and bronchi. These form an interconnecting tree of the conducting airways eventually joining, via 64000 terminal bronchioles, with alveoli to form the acini. The lower respiratory tract is lined with ciliated epithelium as far as the terminal bronchioles

TRACHEA:

It is a membrano-cartilaginous tube which forms the upper part of the lower respiratory tract and convey air from larynx through trachea into the lungs via bronchus.

EXTENT:

Begins as a continuation of lower border of the cricoid cartilage at the level of 6^{th} cervical vertebra.

End by dividing into two bronchi Right and left at the level of lower border of the body of the fourth thoracic vertebra.

DIMENSION:

Length - 10 to 11cm

External Transverse diameter

In adult Male - 2cm

In adult female -1.5cm

Antero posterior diameter - about 12mm.

SHAPE:

It is a tubular structure with a flattened posterior wall.

PARTS:

- ✓ Cervical part
- ✓ Thoracic part

HISTOLOGY:

- ➢ Outer fibrous layer
- ➢ Cartilage rings (16 to 20) of hyaline type and deficient posteriorly where the smooth muscle trachealis fills the gap. In between the adjoining tracheal rings, is a fibro elastic membrane.
- ➢ Sub mucous coat is made of loose connective tissue with large blood vessels, nerves, and mucous glands.
- ➢ Mucous membrane is lined by pseudo stratified ciliated columnar epithelium with globlet cells in between. The epithelium rests on the basement membrane.

FUNCTIONS:

- Support and potency
- Mucociliary escalator
- Cough reflex

BLOOD SUPPLY:

- ➢ Arteries:
- ➢ Inferior thyroid arteries
- ➢ Bronchial arteries
- ➢ Veins:
- ➢ Inferior thyroid venous plexus.

LYMPHATICS:

- Pre tracheal lymph nodes
- Para tracheal lymph nodes

NERVE SUPPLY:

- Laryngeal parasympathetic:
  - Right and left vagus nerve
  - Recurrent laryngeal nerve
- Sympathetic:
  - From upper 4^{th} or 5^{th} Thoracic segment of the spinal cord.

Supply trachealis muscle and the mucous membrane.

BRONCHI:

The two bronchi are formed by the bifurcation of the trachea at the level of the lower border of the body of the 4^{th} thoracic vertebra.

The right bronchus is wider and shorter tube than the left bronchus and it lies in a more vertical position. It is approximately 2.5cm long. After entering the right lung at the hilum, it divides into three branches, one of which passes to each lobe. Each branches then subdivided into numerous smaller branches.

The left bronchus is about 5cm long and is narrower than the right. After entering the lung at the hilum, it divides into two branches, one of which passes to each lobe. Each branch then subdivides progressively into smaller tubes within the lung.

FUNCTIONS:

- Warming and humidifying
- Support and potency

- Removal of particulate matter
- Cough reflex

BLOOD SUPPLY:

Arteries:

Right and left bronchial arteries

Veins:

Bronchial veins

LYMPHATIC SUPPLY:

Lymph passes through lymph nodes around the trachea and bronchial tree, then into the thoracic duct on the left side, and the right lymphatic duct on the other side.

NERVE SUPPLY:

The nerve supply is by parasympathetic and sympathetic nerves. The vagusnerve (Parasympathetic) stimulate contraction of smooth muscles in the bronchial tree, causing bronchoconstriction and sumpathetic stimulation causes bronchodilation.

LUNGS:

They are the essential organs of respiratory system. The right and left lungs lies in the corresponding halves of the thorax. They are separated from each other by structures in the mediastinum.

Colour:

Children - Pink

Adult - Dark grey mottled due to inhalation dust and carbon particles.

Shape:

Conical in shape

Consistency:

Soft and spongy

Parts of the lung:

Apex:

Each lung has a relatively narrow upper end, and it rises into the root of the neck about 25mm above the level of the middle one third of the clavicle.

Surfaces of the lung:

Inferior surface or Base – Concave and semilunar in shape

Costal surface – Convex and is closely associated with costal cartilages, the ribs, and the intercostal muscles.

Medial surface – Concave and has aroughly triangular shaped area called hilum, at the level of 5^{th}, 6^{th}, 7^{th} thoracic vertebra. Structures which form the root of the lung enter and leave at the hilum.

The area between the lungs is mediastinum. It is occupied by the heart, great vessels, trachea, right and left bronchi, oesophagus, lymph vessels and nerves.

Fissures and lobes:

Right lung

The right lung is slightly larger than the left and is divided by the oblique and horizontal fissures into three lobes namely

Upper lobe

Middle lobe

Lower lobe

Oblique fissure:

The oblique fissure runs runs from the inferior border upward and backward across the medial and costal surfaces until it cuts the posterior border about 2½ inches below the apex.

Horizontal fissure:

The horizontal fissure runs horizontally across the costal surface at the level of the 4^{th} costal cartilage to meet the oblique fissure in the midaxillary line.

Left lung:

The left lung is divided by a similar oblique fissure into two lobes, the upper and the lower lobe. There is no horizontal fissure in the left lung.

Broncho Pulmonary segments:

The broncho pulmonary segments are the anatomical, functional and surgical units of the lungs. Each lobar bronchus which passes to a lobe of the lung,gives of branches called segmental bronchi. Each segmental bronchus then enters a broncho pulmonary segment. A bronchopulmonary segment has the following characteristics.

It is a sub division of a lung lobe

It is pyramidal in shape with its apex towards the lung root

It is surrounded by connective tissue

It has asegmental bronchus, a segmental artery, lymph vessels, and autonomic nerves.

The segmental vein lies in the connective tissue between adjacent broncho pulmonary segments.

A diseased segment, since it is a structural unit. Can be removed surgically.

The main broncho pulmonary segments are as follows:

Right lung:

Superior lobe:

- Apical
- Posterior
- Anterior

Middle lobe:

- Lateral
- Medial

Inferior lobe:

- Superior(Apical)
- Medial basal

- Anterior basl
- Lateral basa
- Posterior basal

Left lung:

Superior lobe:

- Apical
- Anterior
- Posterior
- Superior lingual
- Inferior lingual

Inferior lobe:

- Superior (Apical)
- Medial basal
- Anterior basal
- Lateral basal
- Posterior basal

Blood supply:

Pulmonary artery

It carries deoxygenated blood from right ventricle to the lungs for oxygenation. It ends in the capillary plexus on the alveolar wall of the lung.

Pulmonary veins:

Two lungs emerge from the hilum of each lung empty into the left atrium. They start from the alveolar capillaries and carry the oxygenated blood from the lungs to the heart.

Bronchial artery:

It is a direct branch from the descending thoracic aorta and supplies the bronchial tree as far as the respiratory bronchioles.

Lymphatic drainage:

- Superficial
- Deep

The superficial lymphatics lie beneath the visceral pleura, while the deep lymphatics follow the ramification of the bronchi and the pulmonary arteries. Both sets of lymphatics end in the broncho pulmonary nodes situated in the hilum of the lung.

Nerve supply:

There are two nerve plexuses. Anterior and posterior pulmonary plexuses, situated on the respective sides of the root of the lung. The plexus consists of both para sympathetic (derived from vagi) and sympathetic (derived from 2^{nd}, 3^{rd}, and 4^{th} thoracic sympathetic ganglia) fibres.

Histology:

Thin alveolar septa separate the alveolar spaces. The septa are lined by thin flattened alveolar cells with a capillary network of blood vessels on theirwall. Electron microscopic studies show that the blood in the capillaries and the air in the alveoli are separated by a thin continuous layer of alveolar epithelium and capillary endothelium with two layers of basement membrane in between them. Many alveolar cells are phagocytic.

Each section of intrapulmonary bronchi show an outer fibrous coat with irregular plates of hyaline cartilage, middle bronchial muscle fibres and inner mucous membrane which is lined by a layer of ciliated columnar epithelium, on its inner surface with lymphoid tissue, longitudinal elastic fibres and mucous secreting glands outer to the epithelium.

The terminal or respiratory bronchioles are about 3.2mm in diameter and have no cartilage in their walls. Simple non-ciliated cubical epithelium lines their lumen.

Pleura:

Each lung is enclosed by a bilayered serous called pleura or pleural sac. The two layers of pleura are the visceral and parietal layers. Visceral (inner) layer is attached firmly to the surface of the lungs. At hilum, it is continuous with parietal (outer) layer, which is attached to the wall of the thoracic cavity.

The narrow space in between the two layers of pleura is called intrapleural space or pleural cavity. This space contains a thin film of serous

fluid called pleural fluid. It is secreted by the visceral layer of the pleura. It functions as the lubricant to prevent friction between two layers. It is involved in creating negative pressure called intrapleural pressure within intrapleural space.

PHYSIOLOGY OF RESPIRATORY SYSTEM

Allergy & Immunology

Mast cells and Basophills:

Mast cells and Baso phills are derived from Bone marrow which plays a vital role in allergic disorders. Mast cells reside predominantly in tissues exposed to the external environment, such as skin and gut, while Basophills are located in the circulation and are recruited into tissues in response to inflammation. Both contain large cytoplasmic granules which enclose performed vasoactive substances such as histamine. Additional mediators are synthesized de novo after activation, including leukotrienes, prostaglandins, and cytokines. Local release of these mediators initiate an inflammatory cascade which increases local blood flow and vascular permeability, stimulates smooth muscle contraction, and increases secretion at mucosal surfaces.

Normally the immune system does not make detectable response to many environmental substances such as foods and inhaled particles to which it exposed on a daily basis. In an allergic reaction, initial exposure to an otherwise harmless exogenous substance (or allergen) triggers the production of specific IgE antibodies by activated B cells. These are bound to the surfaces of mast cells via high affinity IgE receptors, a step that is not immediately associated with clinical sequelae.

However, upon re-exposure, the allergen binds to membrane-bound IgE which activates the mast cells. These release a variety of vasoactive mediators (the early phase response) like histamine causing a type I hypersensitivity reaction and the symptoms of allergy. These range from Sneezing and Rhinorrhoea to anaphylaxsis.

Persistant activation of Mast cells results in the recruitment of other cells to the site of release. In some patients, the early phase response is followed 4-8 hours later by persistant swelling and local inflammation. This is known as late phase reaction and is mediated by Basophills, eosinophills, and Macrophages

Long standing or recurrent allergic inflammation may give rise to a chronic inflammatory response characterized by a complex infiltrate of macrophages, eosinophills, T Lymphocytes in addition to mast cells and Basophills.

RESPIRATION:

Respiration is the process by which oxygen is taken in and carbon dioxide is given out.

Muscles of Respiration

Classified into two types

I. Primary Respiratory muscles:

Responsible for change in size of the thoracic cage during normal quiet breathing.

a) Primary inspiratory muscle

Diaphragm supplied by phrenic nerve (C3 – C5)

External intercostal muscle supplied by intercostal nerves (T1 – T11)

b) Primary expiratory muscle

Internal intercostal muscles innervated by intercostal nerves.

II. Accessary Respiratory muscle:

Help Primary respiratory muscle during forced respiration.

a. Accessary inspiratory muscle

Sternocleidomastoid

Scaleni

Anterior serrati

Elevators of scapulae

Pectoralis

b. Accessary expiratory muscle

Abdominal muscle

Movement of thoracic cage

Inspiration causes enlargement of thoracic cage, which occurs because of the movements of four units of structures,

a) Thoracic Lid:

Formed by manubrium sterni and the first pair of ribs. Due to contraction of scalene muscles, the first rib move upwards to a more horizontal position. This increases the anteroposterior diameter of the thoracic cage.

b) Upper costal series:

Increases the anteroposterior and transverse diameter of the thoracic cage.

c) Lower costal series:

Increases the transverse diameter of the thoracic cage.

d) Diaphragm:

During inspiration, central portion of the Dome shaped diaphragm is drawn downwards. So the diaphragm is flattened, which increases the vertical diameter of the thoracic cage.

Movements of Lungs

During inspiration, due to enlargement of the thoracic cage, the negative pressure is increased in the thoracic cavity. It causes expansion of the lungs.

During expiration, the thoracic cavity decreases in size to the preinspiratory position. The pressure in the thoracic cage also comes back to the preinspiratory level. It compresses the lung tissues so that, the air is expelled out of lungs.

Respiratory Pressures:

Two types of pressures are exerted in the thoracic cavity and the lungs during the process of respiration

A) Intrapleural pressure or intrathoracic pressure:

It is the pressure existing in between the visceral and parietal layers of the pleura. It is exerted by the suction of the fluid that lines the pleural cavity.

Significance of Intrapleural Pressure

Throughout the respiratory cycle intrapleural pressure remains lower than intra-alveolar pressure.

I. Since the intrapleural pressure is always negative, it prevents the collapsing tendency of lungs, which is caused by elastic recoiling of lung tissues.

II. Because of the negative pressure in thoracic region, the larger veins and vena cava are enlarged, i.e. dilated. Also, the negative pressure acts like suction pump and pulls the venous blood from lower part of the body towards the heart against gravity. Thus the intrapleural pressure is responsible for the venous return.

B) Intra-alveolar pressure or intrapulmonary pressure:

It is the pressure existing in the alveoli of the lungs.

Significance of Intra-alveolar pressure

I. The intra-alveolar pressure causes flow of air in and out of alveoli. During inspiration, the intra-alveolar pressure becomes negative, So the atmospheric air enters the alveoli. During expiration, the Intra-alveolar pressure becomes positive, so the air is expelled out of alveoli.

II. The intra-alveolar pressure also helps in the exchange of gases between the alveolar air and the blood.

III. **Exchange of Respiratory Gases:**

In the lungs exchange of respiratory gases takes place between the alveoli and the blood. The exchange of gases occurs through bulk flow diffusion.

Respiratory unit is the structure through which the exchange of gases between blood and alveoli takes place.

Respiratory membrane:

The respiratory membrane is formed by the epithelium of the respiratory unit and endothelium of the pulmonary capillary. The epithelium of the respiratory unit is a very thin layer. As the capillaries are in close contact with this membrane, the alveolar air is in close proximity to capillary blood. This facilitates the gaseous exchange between air and blood.

Diffusion of oxygen:

Diffusion of atmospheric air into the alveoli

The partial pressure of oxygen in the atmospheric air is 159mmHg and in the alveoli it is 104mmHg. Because of the pressure gradient of 55mmHg, oxygen easily enters from atmospheric air into the alveoli

Diffusion of oxygen from alveoli into the blood

When the blood is flowing through the pulmonary capillary, RBC exposed to oxygen only for 0.7 sec at rest and only for 0.25 sec during severe exercise. So the diffusion of oxygen must be quicker and effective. Fortunately this is because of the pressure gradient.

The partial pressure of oxygen in the pulmonary capillary is 40mmHg and in the alveoli, it is 104mmHg. It facilitates the diffusion from alveoli into the blood.

Diffusion of carbondioxide:

Diffusion of Carbon dioxide from blood into alveoli: The partial pressure of carbon dioxide in alveoli is 40mmHg whereas in the blood it is 46mmHg. The pressure gradient of 6mmHg is responsible for the diffusion of carbon dioxide from the blood into the alveoli.

Diffusion of carbon dioxide from alveoli into the atmospheric air:

In the atmospheric air, the partial pressure of carbon dioxide is very insignificant and is only about 0.3mmHg Whereas in the alveoli, it is 40mmHg. So the carbon dioxide enters the atmosphere from alveoli easily.

Exchange of gases at tissue level:

Diffusion of oxygen from blood into the tissues:

The partial pressure of oxygen in the arterial end of systemic capillary is only 95mmHg. The average oxygen tension in the tissues is 40mmHg. It is because of continuous metabolic activity and constant utilization of oxygen. Thus a pressure gradient of about 55mmHg exists between capillary blood and the tissues so that oxygen can easily diffuse into the tissues.

Diffusion of carbon dioxide from tissues into the blood:

Due to continuous metabolic activity, carbon dioxide is produced constantly in the cells of the tissues. So the partial pressure of the carbon dioxide is high in the cells and is about 46mmHg. The partial pressure of carbon dioxide in arterial blood is 40mmHg. The pressure gradient of 6mmHg is responsible for the diffusion of carbon dioxide from tissues into the blood.

Regulation of Respiration

The pattern of respiration is regulated is regulated by two mechanisms:

I. Nervous or neural mechanism

II. Chemical mechanism

I. Nervous mechanism

The respiratory centres are classified into two groups

I. Medullary centre which are made up of

a) Dorsal respiratory group of neurons:

Situated in nucleus of tractussolitarius which is present in the upper part of the medulla oblongata.

Responsible for basic rhythm of respiration.

b) Ventral respiratory group of neurons:

Situated in nucleus ambiguous and nucleus retroambiguous which are present in the medulla oblongata

These neurons inactive during quiet breathing and become active during forced breathing. During forced breathing, these neurons stimulate both inspiratory muscles and expiratory muscle.

II. Pontine centres which are

a) Pneumotaxic centre:

Situated in thedorsolateral pert of reticular formation in upper pons.

The pneumotaxic centre increases the respiratory rate by reducing the duration of inspiration.

b) Apneustic centre:

Situated in the reticular formation of lower pons.

This centre increase the depth of inspiration by acting directly on the dorsal group neurons.

Factors affecting Respiratory centres

a) Impulses from Higher centres:

Impulse from anterior cingulate gyrus, genu of corpus callosum, olfactory tubercle, and posterior orbital gyrus of cerebral cortex inhibit the respiration.

Impulses from motor area and Sylvian area of cerebral cortex cause forced breathing.

b) Impulses from stretch receptors of lungs:

Stretch receptors are the receptors which give response to stretch of the tissues. These receptors are situated on the walls of the bronchi and bronchioles. During inspiration the lungs expand. This causes stretching of lungs and the air passage. So the stretch receptors are stimulated. The impulses from stretch receptors are transmitted by vagal afferent fibres to the respiratory centres. The impulses actually inhibit the dorsal group of neurons and so inspiration stops and expiration starts. Thus the over stretching of the lung tissues is prevented.

c) Impulses from 'J' receptors of lungs:

'J' receptors juxta capillary receptors which are present on the wall of the alveoli and have close contact with the pulmonary capillaries. Few cells are found on the wall of the bronchi. These receptors are the sensory nerve endings of vagus.

The 'J' receptors are stimulated during the following conditions:

- Pulmonary congestion
- Pulmonary oedema
- Pneumonia
- Over inflation of lungs
- Micro embolism in pulmonary capillaries
- Exogenous and endogenous substances like
- Histamine

- Halothane
- Bradykinin
- Serotonin
- Phenyldiguanide

These receptors are responsible for hyperventilation in the patients affected by pulmonary congestion and left heart failure.

d) Impulses from Irritant receptors of lungs:

These receptors present in the bronchi and bronchioles of lungs. The irritant receptors stimulated by irritant chemical agents such as ammonia and sulphur dioxide. These receptors send afferent impulses to respiratory centres via vagal nerve fibres.

Stimulation of irritant receptors produces reflex hyperventilation along with bronchospasm, which prevents further entry of harmful agents into the alveoli.

e) Impulses from Baroreceptors:

Baroreceptors are situated in carotid sinus and arch of aorta, which give response to change in blood pressure. Whenever arterial blood pressure increases, baroreceptors are activated and send inhibitory impulses to medulla oblongata. This causes decrease in blood pressure, and inhibition of respiration.

f) Impulses from Proprioceptors:

Proprioceptors situated in joints, tendons and muscles, which give response to change in position of the body. The proprioceptors are stimulated during the muscular exercise and impulse to cerebral cortex, which in turn causes hyperventilation by sending impulses to the medullary respiratory centres.

g) Impulses from Thermo receptors:

Thermoreceptors are the cutaneous receptors, which give response to change in the environmental temperature. There are two types of thermo receptors namely,receptors for cold and receptors for

warmth. When the body is exposed to cold, the cold receptors are stimulated and send impulses to cerebral cortex which in turn stimulates the respiratory centres and causes hyperventilation.

h) Impulses from Pain receptors:

The pain receptors are those which give response to pain stimulus. Whenever pain receptors are stimulated, the impulses are sent to the cerebral cortex, which in turn stimulates the respiratory centres and causes hyperventilation**.**

II Chemical mechanism

The chemical mechanism of regulation of respiration is operated through chemoreceptors. Chemoreceptors are stimulated by the changes in the chemical constituents of the blood such as,

1. Hypoxia
2. Hypercapnea
3. Increased hydrogen ion concentration

Chemoreceptors are classified into two types namely,

I. Central chemoreceptors:

Situated in the deeper part of the medulla oblongata, close to dorsal group of neurons.The hydrogen ions from carbon dioxide stimulate the central chemoreceptors. These stimulatory impulses are sent to dorsal respiratory group of neurons causing increased ventilation.

II. Peripheral chemoreceptors:

Situated in the carotid and aortic region. Reduction in partial pressure of oxygen is the most potent stimulant for the peripheral chemoreceptors. Whenever, the partial pressure oxygen decreases, the chemoreceptors are stimulated and send impulses through aortic and Hering's nerves. These impulses stimulate the dorsal group of neurons and send stimulatory impulses to respiratory muscles resulting in increased

ventilation. This provides enough oxygen and rectifies the lack of oxygen.

BRONCHIAL ASTHMA

Definition:

Asthma is an inflammatory disease of the small airways, characterised by episodic, reversible bronchial obstruction due to hyper-responsiveness of trachea bronchial tree to a multiplicity of intrinsic and extrinsic stimuli manifested clinically by paroxysms of polyphonic wheeze, dyspnoea, and cough which may be relieved spontaneously or as a result of therapy.

Types:

Extrinsic Asthma (Atopic asthma, early onset Asthma)

Onset is in childhood. It occurs in atopic individuals who really form IgE antibodies in response to allergens. Atopic patients can be identified by skin sensitivity tests. Asthmatic inflammatory reaction is characterised by a cellular infiltrate rich in eosinophils.

Intrinsic Asthma (Non-atopic Asthma, Late onset Asthma)

It can begin at any age, especially in late adulthood. There is no role for allergens in the production of the disease.

Factors precipitating Asthma

- Cold air
- Tobacco smoke
- Dust, acrid fumes
- Emotional stress
- Respiratory infections (viral, bacterial)
- Exercise
- Drugs
  i NSAIDs especially aspirin
  ii β- Blockers
- Chemicals
  Sulfiting agents like Na or K bisulfite, Sulphur dioxide etc.

- Allergens

a) Ingested (fish, nuts, strawberries)
b) Inhaled (dust, pollen, house dust mite)
c) Food additives (tartrazine, metabisulfite preservatives, monosodium glutamate or ajinomoto)
d) Occupational allergens (grain-dust, wood-dust)

Pathophysiology

- Chronic airway inflammation as evidenced by cellular infiltration of airways by activated eosinophils, mast cells, macrophages, and T-lymphocytes
- Released mediators from the above cells cause bronchial smooth muscle contraction
- Denudation and desquamation of the epithelium forming mucous plugs that obstruct the airway
- Airway remodelling as evidenced by

a) Smooth muscle hypertrophy and hyperplasia
b) Goblet cell and sub-mucosal gland hypertrophy leading to mucous hypersecretion
c) Collagen deposition causing thickening of lamina reticularis
d) Cellular infiltration, oedema and possible airway wall thickening.

Epidemiology

The prevalence of asthma increased steadily over the later part of the last century in countries with a western lifestyle and is also increasing in developing countries. Current estimates suggest that 300 million people world-wide suffer from asthma and an additional 100 million may be diagnosed with asthma by 2025. In childhood, asthma is more common in boys, but following puberty females are more frequently affected. The socio-economic impact of asthma is enormous, particularly when poor control leads to days lost from school or work, hospital admissions and for some patients, a premature death.

Clinical Features

- Wheezing

  Widespread, polyphonic, high pitched wheezes are heared.

Expiratory wheeze is heard with mild broncho-constriction.

Inspiratory and expiratory wheezes are heard inmoderatebroncho-constriction

Inspiratory wheeze is heard in severe broncho-constriction.

In near fatal asthma, the chest is silent.

- Chest tightness
- Breathlessness and
- Cough with mucoid tenacious sputum

Classification of severity

	Symptoms	Night-time symptoms	PEF
Step1 Intermittent	<1 time a week Asymptomatic and normal PEF between attacks	≤ 2 times a month	≥ 80% predicted Variability<20%
Step2 Mild persistent	≥1 time a week but <1time a day	>2 times a month	≥ 80% predicted Variability<20-30%
Step3 Moderate persistent	Daily use β2 agonist daily attacks affect activity	>1 time a week	<80% Predicted Variability >30%
Step4 Severe Persistent	Continuous limited physical activity	Frequent	≤ 60% Predicted Variablity>30%

Diagnosis and Investigations

Initial diagnosis of Bronchial asthma is based on observing the patients symptoms and health history.

- Auscultate for specific sounds that indicate lung inflammation, such as moist rales, crackling and wheezing that indicates airway narrowing.
- A sputum culture may be performed particularly if the sputum is green or has blood on it to determine whether a bacterial infection is present. In diagnosing a chronic Lung disorder, a sample of sputum is collected using a procedure called bronchoscopy.
- Chest x-ray:

  Chest x-ray should be taken to rule out other causes of wheezing and also to rule out the presence of pneumothorax in all cases of severe acute asthma.
- Pulmonary Function Tests:

  PET shows obstructive type of lung disease.

  FEV1 following 2 puffs of beta agonist shows an increase by 15% or greater than the previous level.
- Peak Expiratory Flow:

  Serial recordings of PEF may show overnight fall (morning dip) and subsequent rise during the day in patients with asthma.

  There are increased eosinophils in sputum and blood. Serum IgE is elevated in atopic asthma.
- ECG

PEAK EXPIRATORY FLOW RATE

PEFR - peak expiratory flow rate - The maximal airflow rate achieved while forcefully expelling air from the lungs, following maximal inspiration; expressed in litres/ min Thus, peak expiratory flow is a measurement, which tells us whether bronchioles are in spasm and if yes, their severity.

Significance of measuring PEFR

- It is helpful in distinguishing between constrictive (TB, silicosis)andobstructive (asthma) lung disease.
- In asymptomatic cases, it may be the only means of diagnosis
- Can point out specific trigger factors for asthma.
- Can help judge the response to medication.

Normal values

These depend on height, age and sex of an individual. Thus values are greater in tall people, adults and in men

Using PEFR in day-to-day practice1.

1.Every patient's baseline PEFR must be noted.
2. Judge how low is it as compared to expected value
3. Look for improvement after nebulisation/ treatment.
4. A reduction in more than 20% of a patient's baseline value signifies severity.
5. A PEFR of d signifies a critical stage. This patient must be hospitalized, otherwise he may go in respiratory failure.

The PEFR of an individual should fall within a range of 20% on either side of his predicted normal value.

Expected PEFR in children	
Male/ Female child - 5 to 15 yrsHeight (Mts.)	**PEFR (lts/min)**
0.90	92
0.95	108
1.00	124
1.05	147
1.10	169
1.15	192
1.20	215
1.25	238
1.30	260
1.35	283
1.40	306
1.45	329
1.50	351
1.55	374
1.60	397
1.65	420
1.70	442
1.75	465
1.80	488

Expected PEFR depending on height and age of a male

Male adult Ht (Age)	**18/25 yrs**	**30**	**35**	**40**	**45**	**50**	**55**	**60**	**65**	**70**
1.55 Mt	515 lts/min	502	489	477	463	451	438	425	412	399
1.60	534	520	508	495	482	469	456	443	430	417
1.65	552	539	526	513	501	487	475	462	449	436
1.70	570	558	544	532	519	506	493	480	467	454
1.75	589	576	563	550	537	525	511	499	486	473
1.80	607	694	582	568	556	543	530	517	504	491
1.85	625	613	600	587	574	561	548	535	522	510
1.90	644	631	618	606	592	580	567	554	541	528
1.95	663	649	637	624	611	598	585	572	559	546

Expected PEFR depending on height and age of a female										
Female adult Ht (Age)	**18/25**	**30**	**35**	**40**	**45**	**50**	**55**	**60**	**65**	**70**
1.45	367	358	349	340	331	322	313	304	295	286
1.50	383	374	365	356	347	338	329	320	311	302
1.55	400	391	382	373	364	355	346	337	328	319
1.60	416	407	398	389	380	371	362	353	344	335
1.65	433	424	415	406	397	388	379	370	361	352
1.70	449	440	431	422	413	404	395	386	377	368
1.75	466	457	448	439	430	421	412	403	394	385
1.80	482	473	464	455	446	437	428	419	410	401

DIFFERENTIAL DIAGNOSIS

1. Chronic bronchitis
2. Emphysema
3. Cystic fibrosis
4. Viral bronchiolitis
5. Mechanical airway obstruction
6. Foreign body aspiration
7. Endobronchial tumour
8. Cardiac failure
9. Superior vena cava syndrome
10. Substernal thyroid
11. Vocal card dysfunction
12. Pulmonary embolism
13. Pulmonary eosinophilia
14. Drugs-ACEI, β -blockers
15. Systemic vasculitis
16. Carcinoid syndrome
17. Allergic bronchopulmonaryaspergillosis

Management of Asthma

Acute attack:

- Get out of bed
- Take extra puff of aerosol inhaler
- Take some hot tea or beverage or sips of warm water
- Injection of adrenaline 0.5ml subcutaneously
- If aerosol is ineffective, prolonged repeated attacks at night causes immobilization, then start course of Prednisolone 5mg tablet, 2 tablets tds. Then reduce dose gradually.
- Asthaline inhalation-Take deep breath for 5-10 seconds. Two puffs to be inhaled at the interval of 5 minutes. Alternative is terbutaline inhalation. If no response

- Injection salbutamol 200mg/IM or 100mg/IV or
- Injection terbutaline 0.25-0.5mg SC or IV over 10 minutes followed by maintenance dose of 12.5mg/minute.
- Antibiotics if evidence of infection-fever, purulent sputum.

Chronic asthma:

- Avoid known allergens
- Avoid smoking
- Drugs
- Preventives – Beclate inhalation, inhalation 3-4 times daily or
  Oral Prednisolone or Betamethasone at minimum effective dose
- Sodium Cromoglycate inhalation by metered dose inhaler 2 puffs 4 times daily.
- Ketofen 1mg tab, 1-2 tablets with food.

Trial drugs

LITERATURE REVIEW OF TRIAL DRUGS

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Chemical Name : Red sulphide of mercury

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- ¯¼ü§ÈüÈ (Nutrient)

Ì½õ (Properties) :

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Chemical Name : Sodium Biborate

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¦Åû ¨Çâ ñ Î:-

Botanical Name : Allium sativum

Family : Lilliaceae

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- ❖ «¸ð Î Å¡Â¸üÈ¢ (Carminative)
- ❖ À°¾ò à ñ Ê (Stomachic)

Ì½õ (Properties) :

º ý É¢§Âj Î Å¡¾ó¾¨Ä §¿¡× ¾¡ûÅÄ¢ Áý É¢ÅÕ ¿÷§¸¡¨Å Åý º¾õ - « ý É§Á ¯û Ù ûÇ¢¸ ñ À¡ö ¯¨Ç ãÄ §Ã¡¸Óõ §À¡õ ¦Åû Ù ûÇ¾ý É¡ø ¦ÅÕ ñ Î.

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LINGAM

VENGARAM

GARLIC

Materials & Methods

MATERIALS AND METHODS

PROTOCOL

STUDY DESIGN:

The open clinical trial on **SWASA KASAM** was conducted at the OPD section of **POST GRADUATE, POTHU MARUTHUVAM DEPARTMENT** attached to **ARIGNAR ANNA HOSPITAL OF INDIAN MEDICINE**, Chennai-106, during the period 2010- 2013.

POPULATION AND SAMPLE:

The population consists of all patients satisfying the inclusion and exclusion criteria mentioned below. Sample consists of swasa kasam patients attending the OPD of Arignar Anna Hospital, Arumbakkam, Chennai-106.

SAMPLE SIZE:

The trial size will be 40 patients.

INCLUSION CRITERIA

1. Age: between 20 - 80 years.
2. Willing to give specimen of blood for investigation when required.
3. Willing to attend the OPD once in 7 days.
4. With the symptoms of Dyspnoea, Cough with expectoration, Wheezing, Tightness of chest, Rhinitis, Sneezing, Head ache.

EXCLUSION CRITERIA:

1. Congestive cardiac failure
2. Pulmonary tuberculosis
3. Chronic bronchitis
4. Bronchiectasis
5. Bronchogenic carcinoma
6. Pregnancy

WITHDRAWAL CRITERIA

- Intolerance to the drug and development of adverse reactions during drug trial.
- Patient turned unwilling to continue in the course of clinical trial.

EVALUATION OF CLINICAL PARAMETERS:

Patients are clinically evaluated by following parameters.

HISTORY TAKING:

Age, Occupation, Socio economic status, Complaints and duration,Previous illness, Family history, Personal habits were recorder in the case sheet for every patient at the time of first visit to the OP.

INVESTIGATIONS

Blood:

- TC
- DC
- ESR
- Hb
- Blood Sugar (F) & (PP)
- Blood Urea
- Serum Cholesterol
- VDRL

Urine :

- Albumin
- Sugar
- Deposits

- Sputum for AFB
- X-ray Chest PA View
- PEFR (peak expiratory flow rate)
-

CLINICAL DIAGNOSIS BASED ON SIDDHA SYSTEM

The parameters used to diagnose the disease **swasa kasam** based on siddha system are:

- Poriaalaridhal

- Pulanaalaridhal
- Vinaadhal
- Uyirthathukkal
- Udalthathukkal
- Envagaithervu:

Naa, Niram, Mozhi, Vizhi, Sparisam, Malam, Moothiram, Naadi.

- Neerkuri:

Niram, Manam, Nurai, Enjal, Edai.

- Neikuri:

TRIAL MEDICINE, DOSAGE, AND DURATION:

INTERNAL MEDICINES:

I. Linga mathirai 130mg

Ingredients:

- **Purified lingam - 100 gm**
- **Purified vengaram – 100 gm**
- **Garlic juice**

Procedure:

- Purified lingam is powdered finely and purified vengaram also powdered.
- Add both lingam and vengaram powder in kalvam
- add garlic and grind it to make a tablet form at the weighit of 130 mg (kundri eadai.)

Dosage : 1 tab Tds, After food

Adjuvant : Water

Duration : 48 days

Indications : Iraippu (Asthma), Irumal(cough), Flatulence.

Reference : kannusami paramparai vaithiyam pg no.164-165

LINGA MATHIRAI

Results & Observations

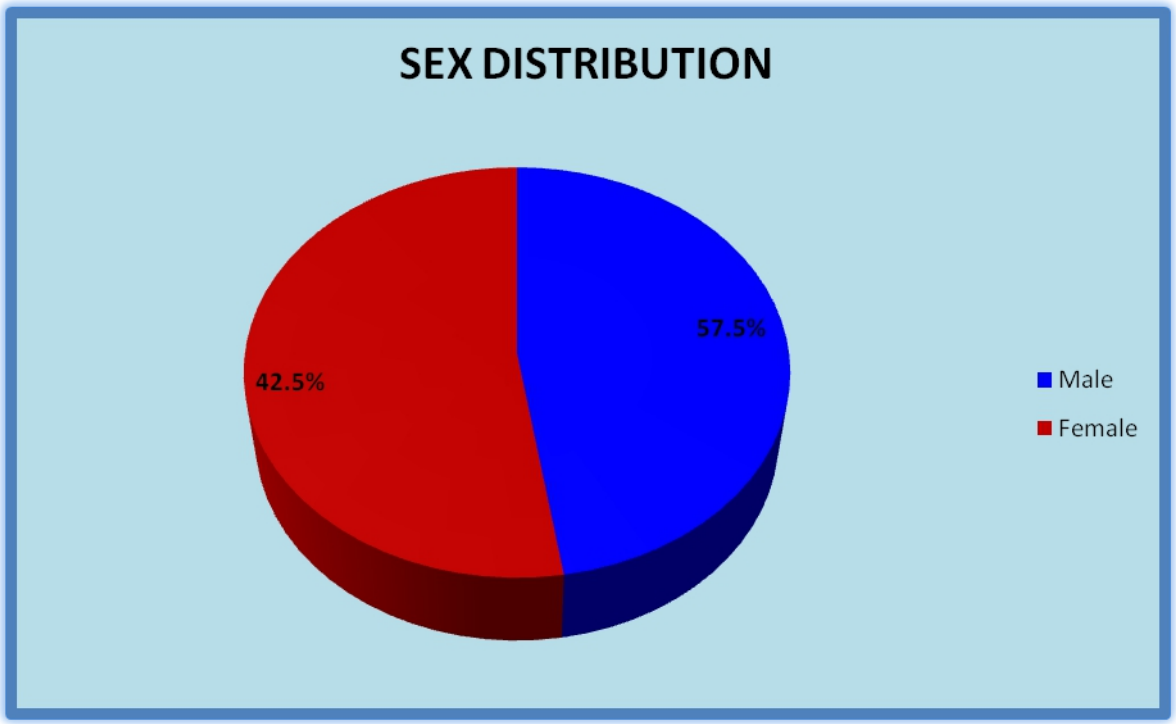
RESULTS AND OBSERVATION

The study on Swasa kasam was carried out in 40 patients in the OP/IP Department Pothumaruthuvam, Government Siddha medical College, Chennai-106 attached to Arignar Anna Hospital during 2010-2013 were analysed. The observation were made and tabulated with following criteria.

- Sex Distribution
- Age Distribution
- Socio-Economic status
- Occupational Reference
- Personal habits and Diet
- Kaalam Distribution
- Paruvakaalam
- Thinai Reference
- Duration of illness
- Mukkutram
- Ezhuudalkattugal Reference
- EnvagaiThervugal Reference
- Neikuri Reference
- Clinical features
- Clinical Prognosis
- Gradation of Results
- Peak Expiratory flow Rate

1. SEX DISTRIBUTION:

S. No.	Sex	No. Of cases / 40	Percentage (%)
1	Male	19	47.5%
2	Female	21	52.5%

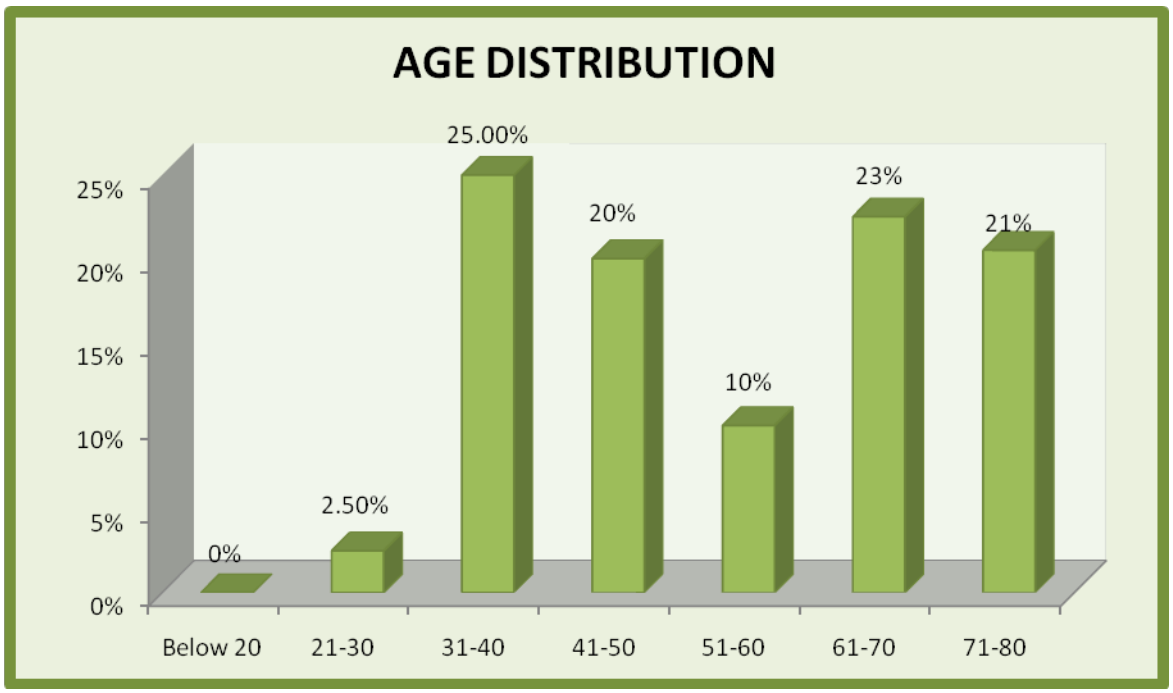


Inference:

Out of 40 patients, 19 cases (47.5%) were male and 21 cases (52.5%) were female.

2. AGE DISTRIBUTION:

S. No	Age groups	No. Of cases/ 40	Percentage (%)
1.	Below 20 years	0	0%
2.	21- 30 years	1	2.5%
3.	31- 40 years	10	25%
4.	41- 50 years	8	20%
5.	51- 60 years	4	10%
6.	61- 70 years	9	22.5%
7.	71-80 years	8	20.5%

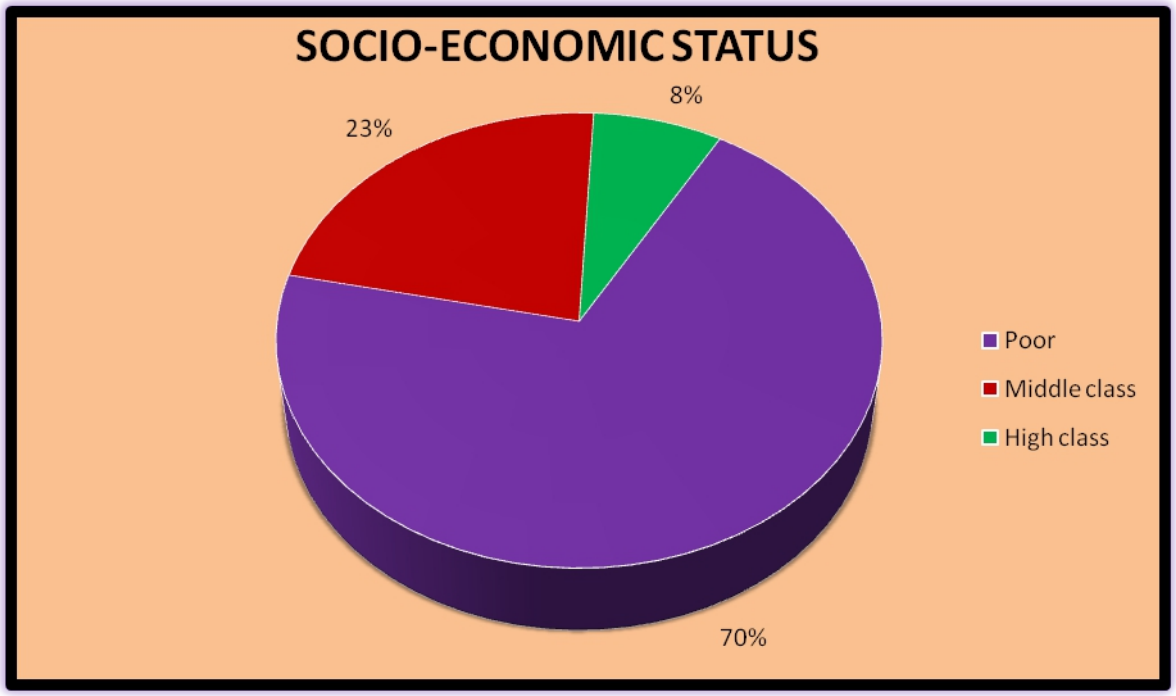


Inference:

From selected 40 cases, 2 patients (5%) were below 20, 7 patients (17.5%) were between 21-30, 9 patients (22.5%) were between 31-40, 8 patients (20%) were between 31-40, 8 patients (20%) were between 41-50, 6 patients (15%) were between 61-70.

3. SOCIO-ECONOMIC STATUS:

S. No	Socio-economic status/Year	No. Of cases	Percentage (%)
1.	Poor (below 10,000)	28	70%
2.	Middle class (10,000-20,000)	9	22.5%
3.	High status (Above 20,000)	3	7.5%

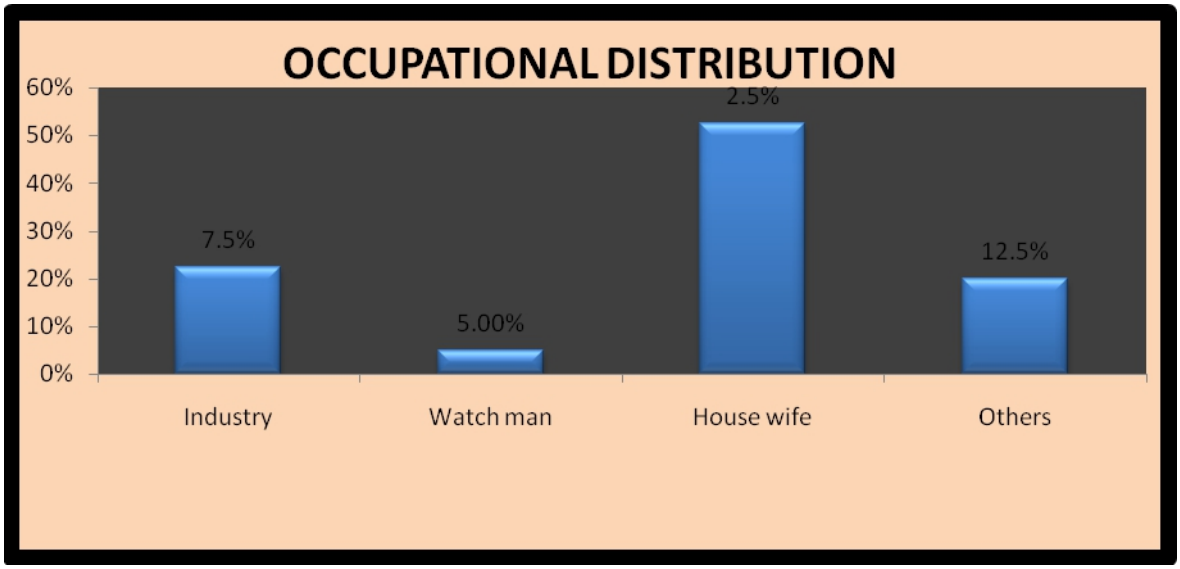


Inference:

Regarding socio-economic status 28 patients (70%) comes under poor category, 9 patients (22.5%) comes under middle class category, and 3 patients (7.5%) comes under high class category.

4. OCCUPATIONAL REFERENCE:

S. No	Occupation	No. Of cases	Percentage
1.	Industry	9	22.5%
2.	Watch man	2	5%
3.	House wife	21	52.5%
4.	Others	8	20%

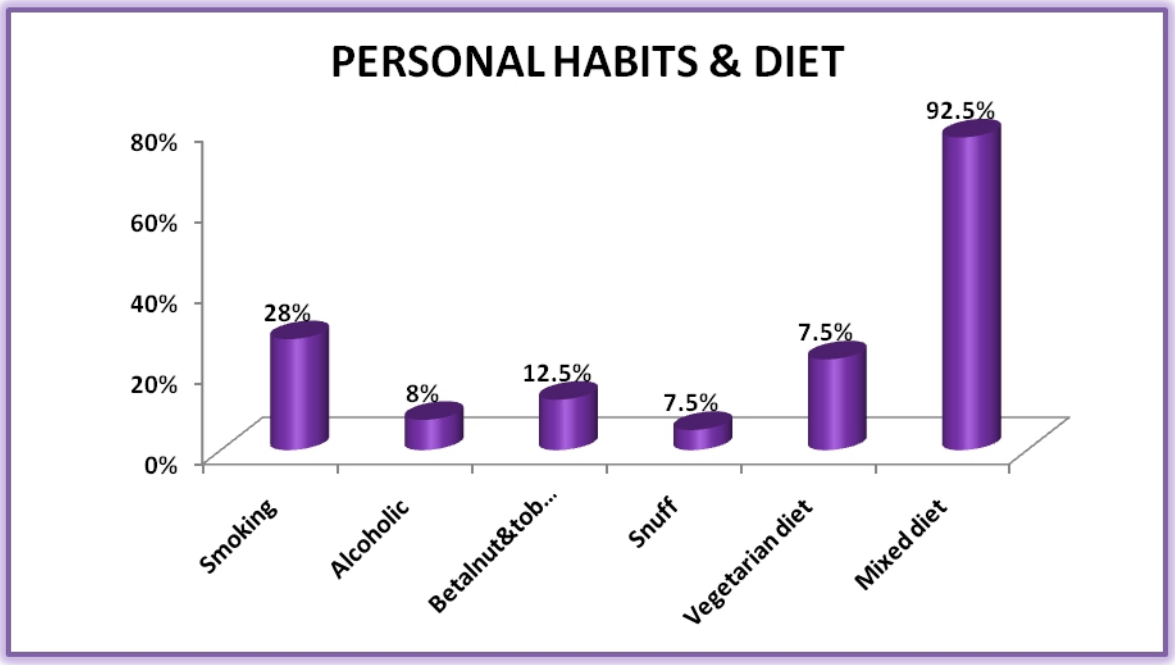


Inference:

Out of 40 patients, 9 patients (22.5%) were industry, 2 patients (5%) were watch man, 21 patients (52.5%) were house wife, 8 patients (20%) were in other occupation.

5. PERSONAL HABITS AND DIET REFERENCE:

S. No	Personal habits & diet	No. Of cases	Percentage (%)
1.	Smoking	11	27.5%
2.	Alcoholic	3	7.5%
3.	Betalnut & Tobacco chewing	5	12.5%
4.	Snuff	2	5%
5.	Vegetarian diet	9	22.5%
6.	Mixed diet include non vegetarian.	31	77.5%

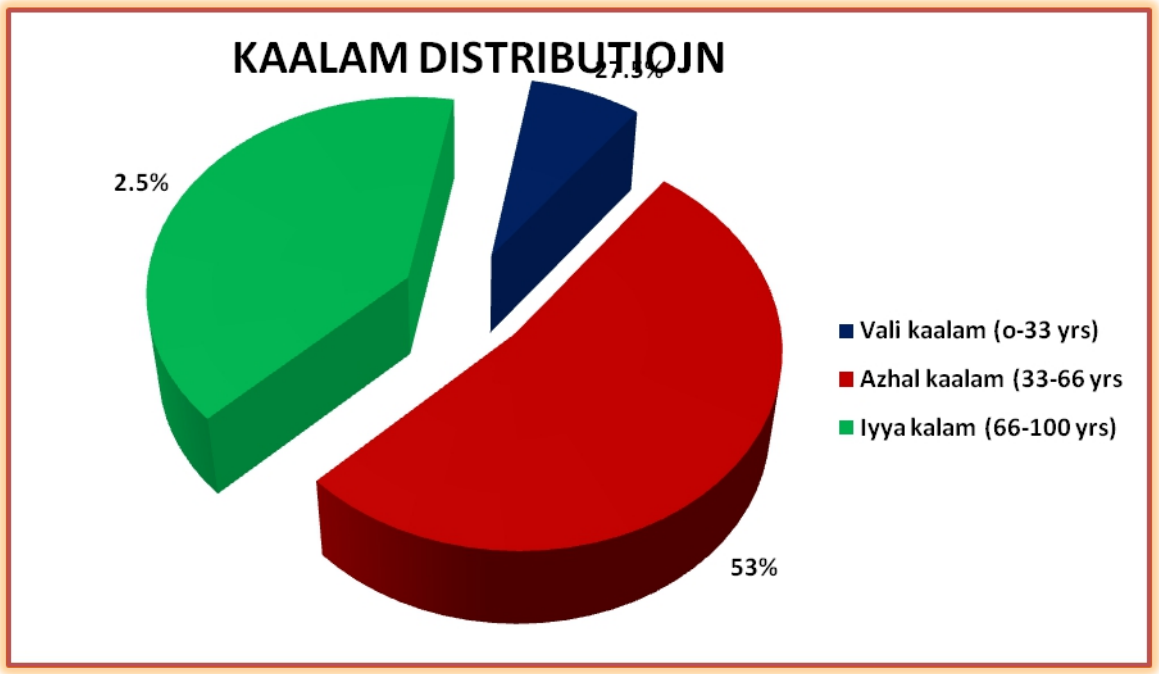


Inference:

Regarding personal habits, 11 patients (27.5%) were smoker, 3 patients (7.5%) were Alcoholic, 5 patients (12.5%) were betalnut & Tobacco chewer, and 2 patients (5%) were snuff users. Regarding diet 9 patients (22.5%) takes vegetarian diet and 37 patients (77.5%) takes mixed diet.

6. KAALAM DISTRIBUTION:

S. No	Kaalam	No. Of cases/40	Percentage (%)
1.	Vali kaalam (0-33 yrs)	3	7.5%
2.	Azhal kaalam (33-66 yrs)	21	52.5%
3.	Iyya kaalam (66-100 yrs)	16	40%

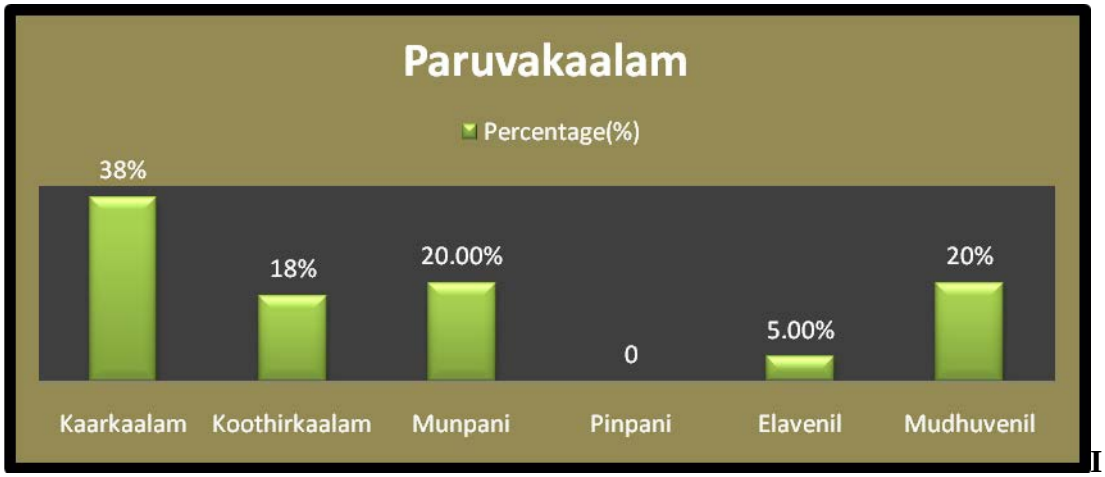


Inference:

Out of 40 patients, 3 patients (7.5%) comes under Vali kaalam, 21 patients (52.5%) comes under Azhal kaalam, and 16 patient (40%) comes under Iyya kaalam.

7. PARUVAKAALAM:

S. No	Paruvakaalam Seasons	Months	No. Of cases/ 40	Percentage (%)
1.	Kaarkaalam	Avani, Puratasi, Mid Aug-Mid Oct	15	37.5
2.	Koothirkaalam	Iyppasi, Kaarthigai Mid Oct-Mid Dec	7	17.5
3.	Munpani	Margazhi, Thai Mid Dec-Mid Feb	8	20%
4.	Pinpani	Maasi, Panguni Mid Feb-Mid April	-	-
5.	Elavenil	Chithirai, vaigasi Mid April- Mid June	2	5%
6.	Mudhuvenil	Aani, Aadi Mid June-Mid Aug	8	20%

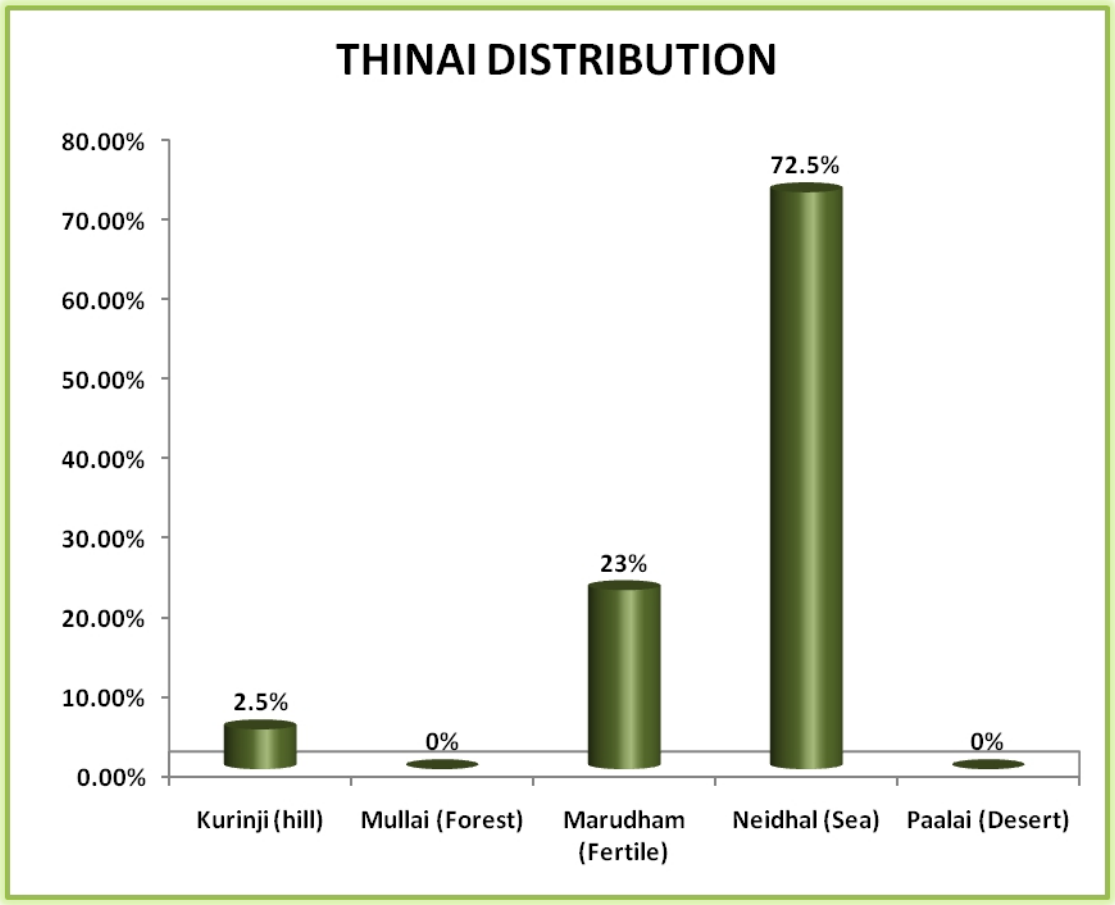


Inference:

From selected 40 patients, 15 patients (37.5%) comes under Kaarkaalam, 7 patients (20%) comes under Koothirkaalam, 8 patient (20%) comes under Munpani, 2 Patient (5%) comes under Elavenil, 8 patients (20%) comes under Mudhuvenil kaalam.

8. THINAI REFERENCE:

S. No	Thinai	No. Of cases/ 40	Percentage (%)
1.	Kurinji (Hill)	2	5%
2.	Mullai (Forest)	0	0
3.	Marudham (Fertile)	9	22.5%
4.	Neidhal (Sea)	29	72.5%
5.	Paalai (Desert)	0	0

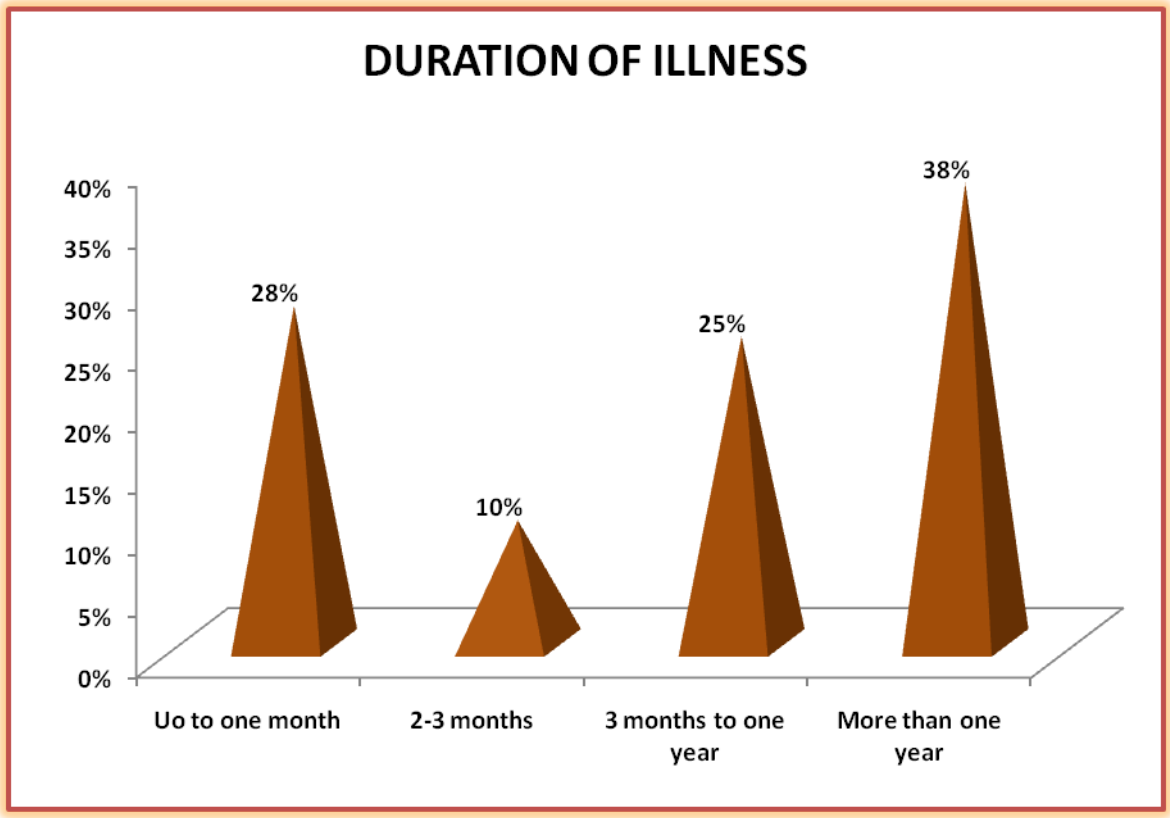


Inference:

Out of 40 patients, 2 patient (5%) comes under kurinji, patient (22.5%) comes under marudham, 29 patient (72.5%) comes under Neithal category.

9. DURATION OF ILLNESS:

S. No	Duration of illness	No. Of cases/ 40	Percentage (%)
1.	Up to one month	11	27.5%
2.	2-3 months	4	10%
3.	3 months to one year	10	25%
4.	More than one year	15	37.5%



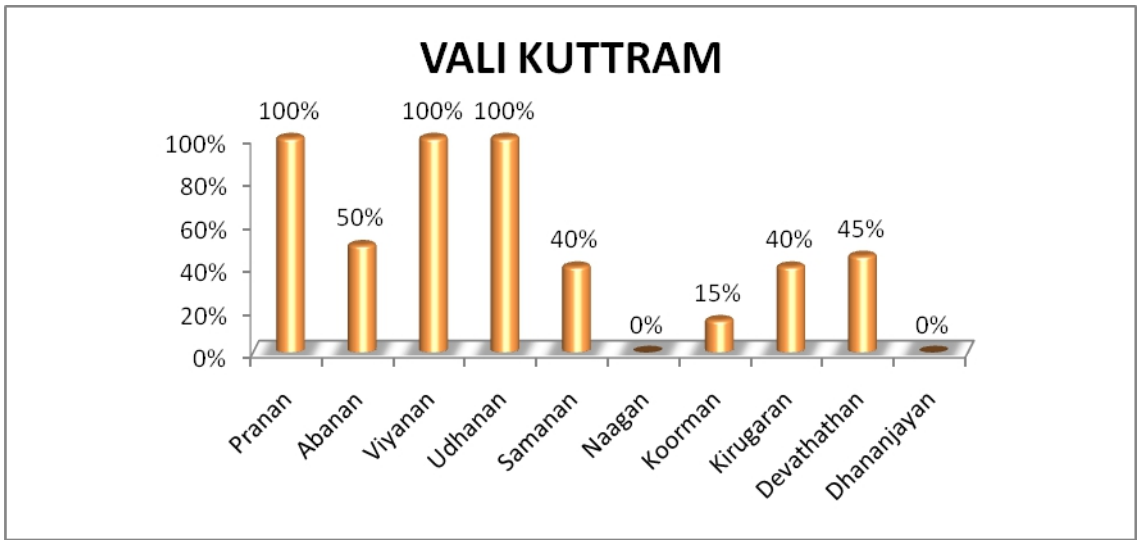
Inference:

Out of 40 patients, 12 patients (30%) belongs to Up to one month category, and 6 patients (15%) belongs to 2-3 months category, 12 patients (30%) belongs to 3 months to one year category, 10 patients (25%) belongs to more than one year category.

10. REFERENCE TO MUKKUTRAM

I. VALI

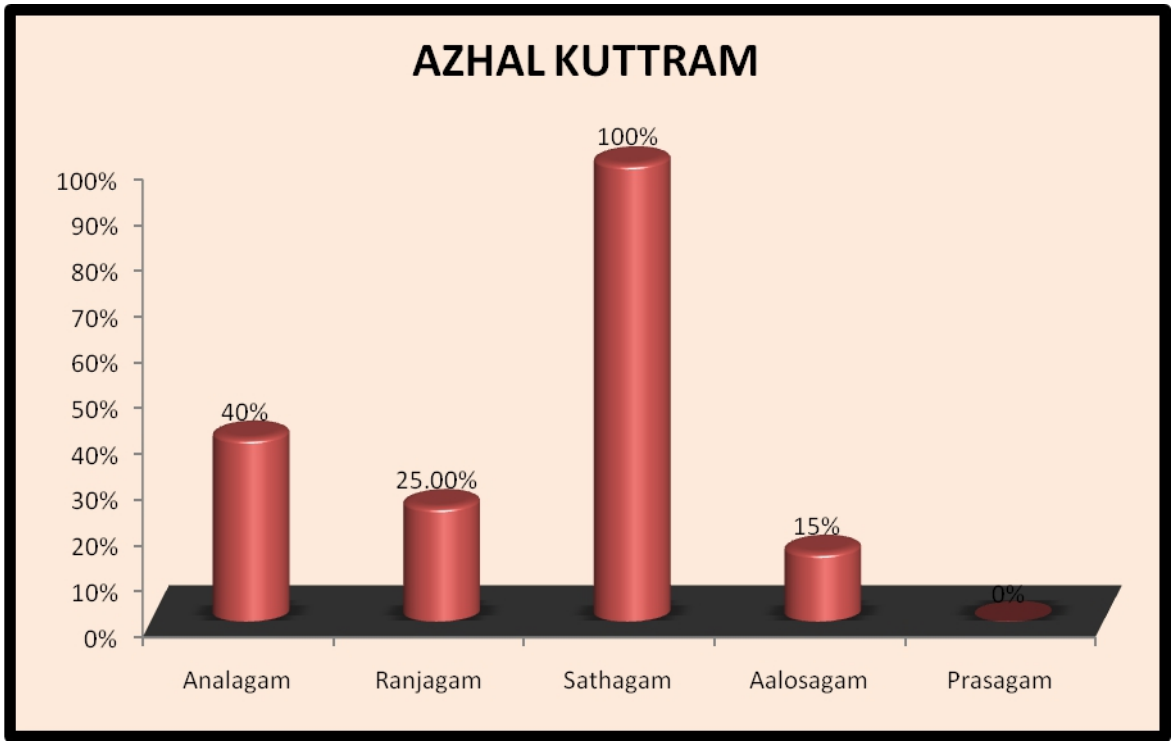
S. No	Classification of vali	No. Of cases	Percentage (%)
1.	Pranan	40	100%
2.	Abanan	20	50%
3.	Viyanan	40	100%
4.	Udhanan	40	100%
5.	Samanan	16	40%
6.	Naagan	0	0%
7.	Koorman	6	15%
8.	Kirugaran	16	40%
9.	Devathathan	18	45%
10.	Dhananjayan	0	0%



Inference: From the selected 40 patients, pranan was affected in 40 patients (100%), Abanan in 20 patients (50%), Viyanan was affected in 40 patients (100%), Udhanan in 40 patients (100%), samanan in 16 patients (40%), Koorman in 6 patients (15%), Kirugaran in 16 patients (40%), Devathathan in 18 patients (45%).

II.AZHAL

S. No	Classification of azhal	No. Of cases	Percentage (%)
1.	Analagam	16	40%
2.	Ranjagam	10	25%
3.	Saathagam	40	100%
4.	Aalosagam	6	15%
5.	Prasagam	0	0%

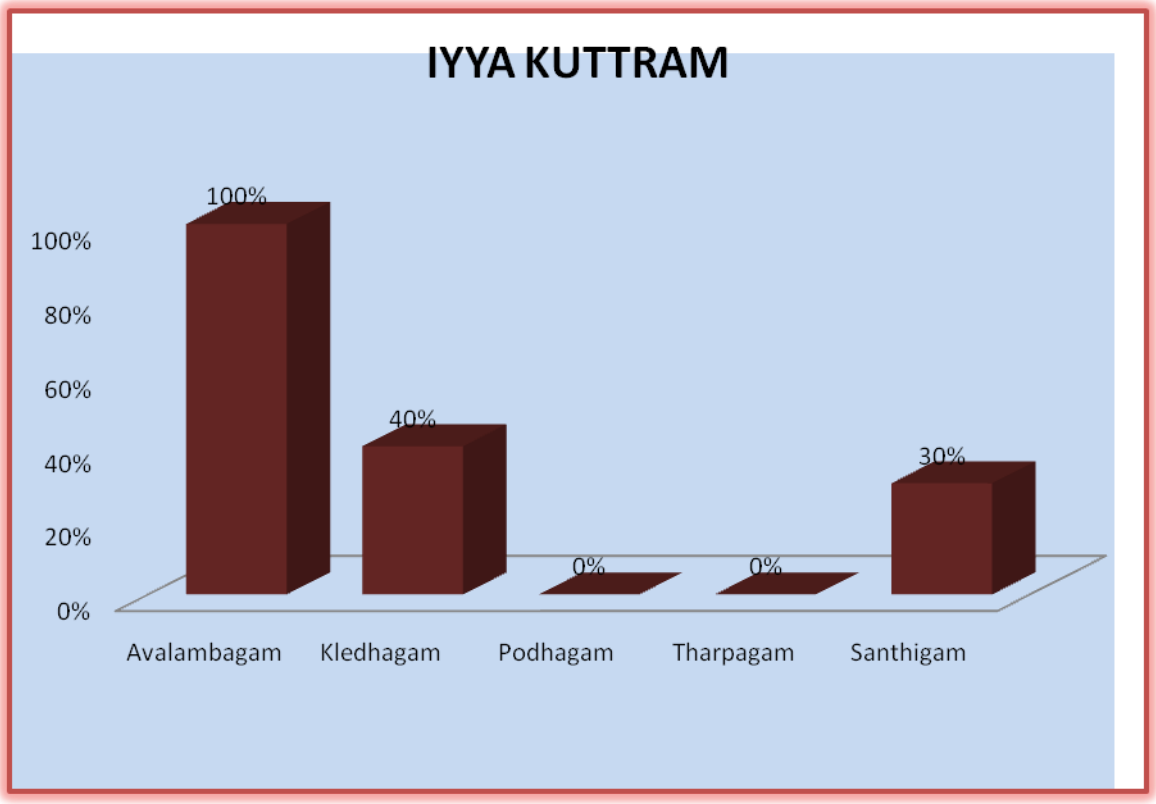


Inference:

Out of 40 patients Analagam was affected in 16 patients (40%), Ranjagam was affected in 5 patients (25%), Sathagam was affected in 40 patients (100%), Aalosagam was affected in 6 patients (15%).

III. IYYAM

S. No	Classification of Iyyam	No. Of cases	Percentage (%)
1.	Avalambagam	40	100%
2.	Klethagam	16	40%
3.	Pothagam	0	0%
4.	Tharpagam	0	0%
5.	Santhigam	12	30%

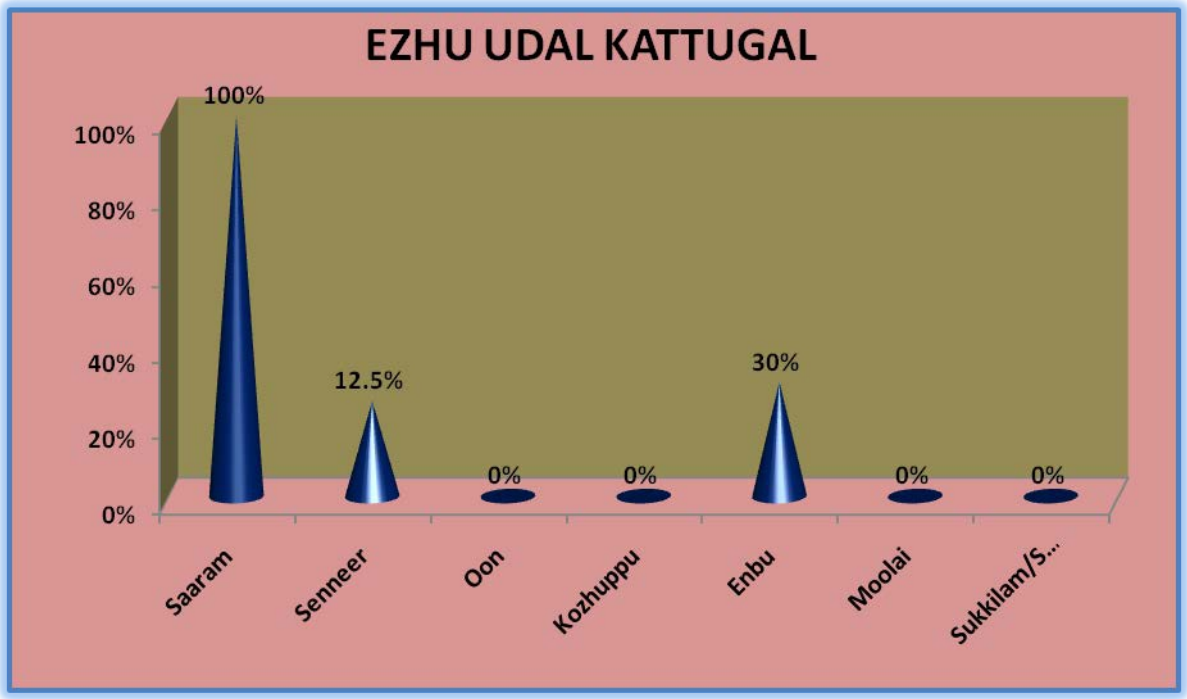


Inference:

Out of 40 patients, Avalambagam was affected in 40 patients (100%), Kiledhagam was affected in 16 patients (40%), Santhigam was affected in 12 patients (30%).

11. EZHU UDALKATTUGAL

S. No	Ezhu udal kattugal	No. Of cases	Percentage (%)
1.	Saaram,	40	100%
2.	Senneer	10	25%
3.	Oon	0	0%
4.	Kozhuppu	0	0%
5.	Enbu	12	30%
6.	Moolai	0	0%
7.	Sukkilam/Suronitham	0	0%

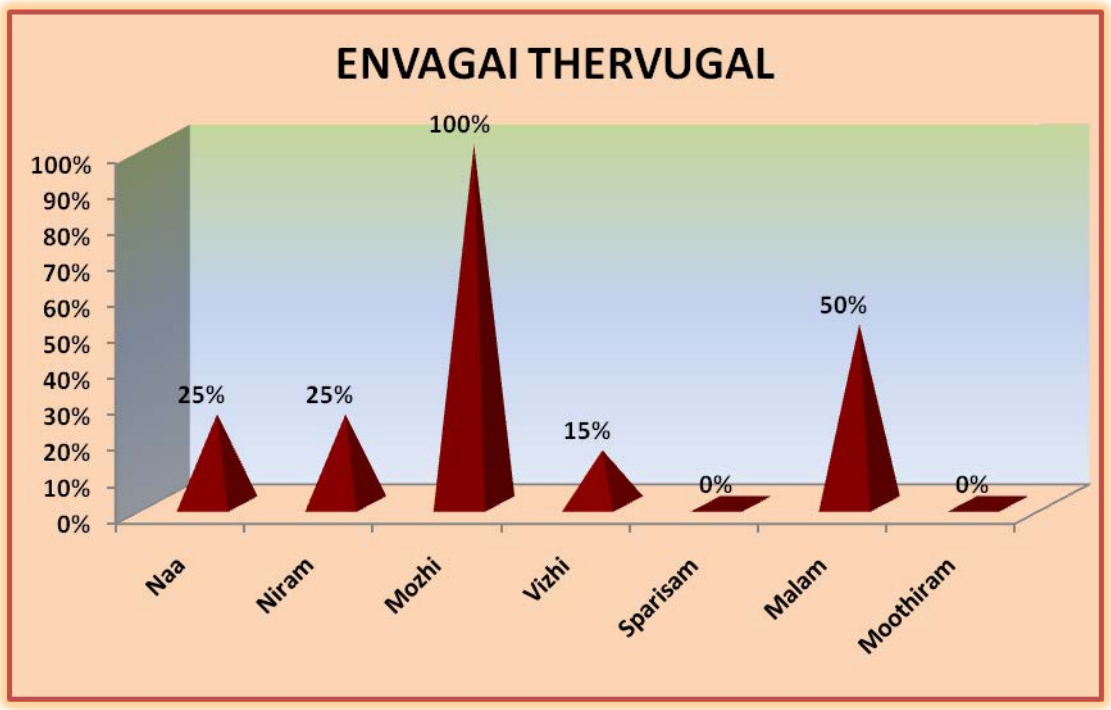


Inference:

Out of 40 cases, Saaram was affected in 40 patients (100%), Senneer was affected in 10 patients (25%), Enbu was affected in 12 patients (30%).

12. ENVAGAI THERVUGAL REFERENCE

S. No	Envagai Thervugal	No. Of cases	Percentage (%)
1.	Naa	10	25%
2.	Niram	10	25%
3.	Mozhi	40	100%
4.	Vizhi	6	15%
5.	Sparisam	0	0%
6.	Malam	20	50%
7.	Moothiram	0	0%

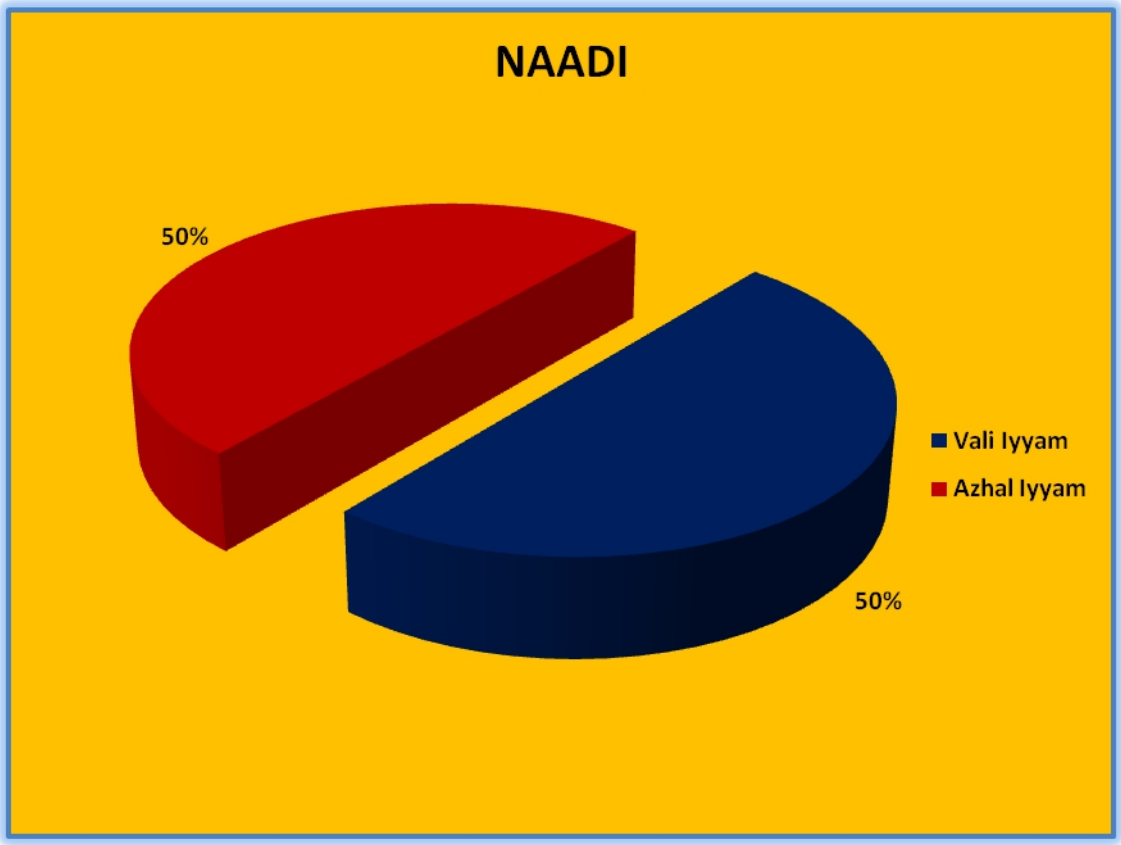


Inference:

Regarding Envagai thervu, Naa (coated) was affected in 10 patients (25%), Niram was affected in 10 patients (25%), Mozhi was affected in 40 patients (100%), Vizhi was affected in 6 patients (15%), and Malam was affected in 20 patients (50%).

8.NAADI

S. No	Naadi	No. Of cases	Percentage (%)
1.	Vali Iyyam	20	50%
2.	Azhal Iyyam	20	50%

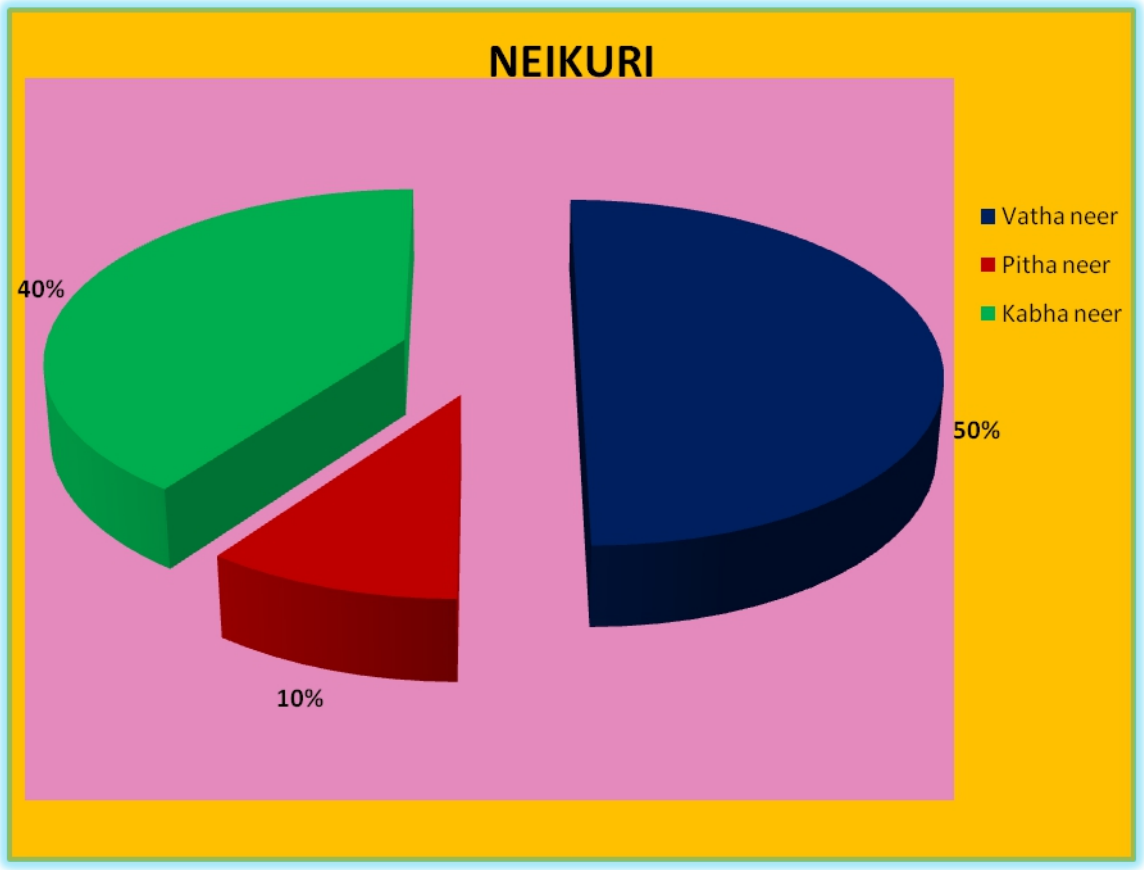


Inference:

20 patients had Vali iyya naadi and 20 patients had Azhal iyya Naadi.

13. NEIKURI REFERENCE

S. No	Neikuri	Character of urine	No. Of cases	Percentage (%)
1.	Vatha neer	Spreads like snake	20	50%
2.	Pitha neer	Spreads like ring	4	10%
3.	Kabha neer	Float like pearl	16	40%

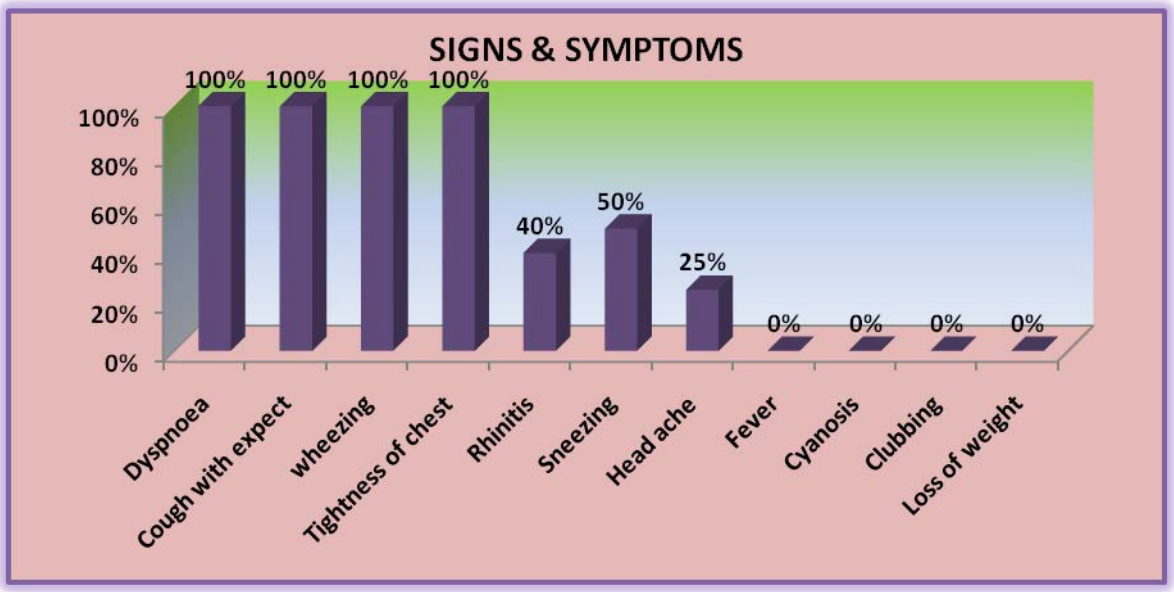


Inference:

20 patients (50%) had vatha neer, 4 patients (10%) had Pitha neer, 16 patients (40%) had Kabha neer.

14. CLINICAL FEATURES

S. No	Signs& Symptoms	No. of cases	Percentage (%)
1.	Dyspnoea	40	100%
2.	Cough with expectoration	40	100%
3.	Wheezing	40	100%
4.	Tightness of chest	40	100%
5.	Rhinitis	16	40%
6.	Sneezing	20	50%
7.	Head ache	10	25%
8.	Fever	0	0%
9.	Cyanosis	0	0%
10.	Clubbing	0	0%
11.	Loss of weight	0	0%

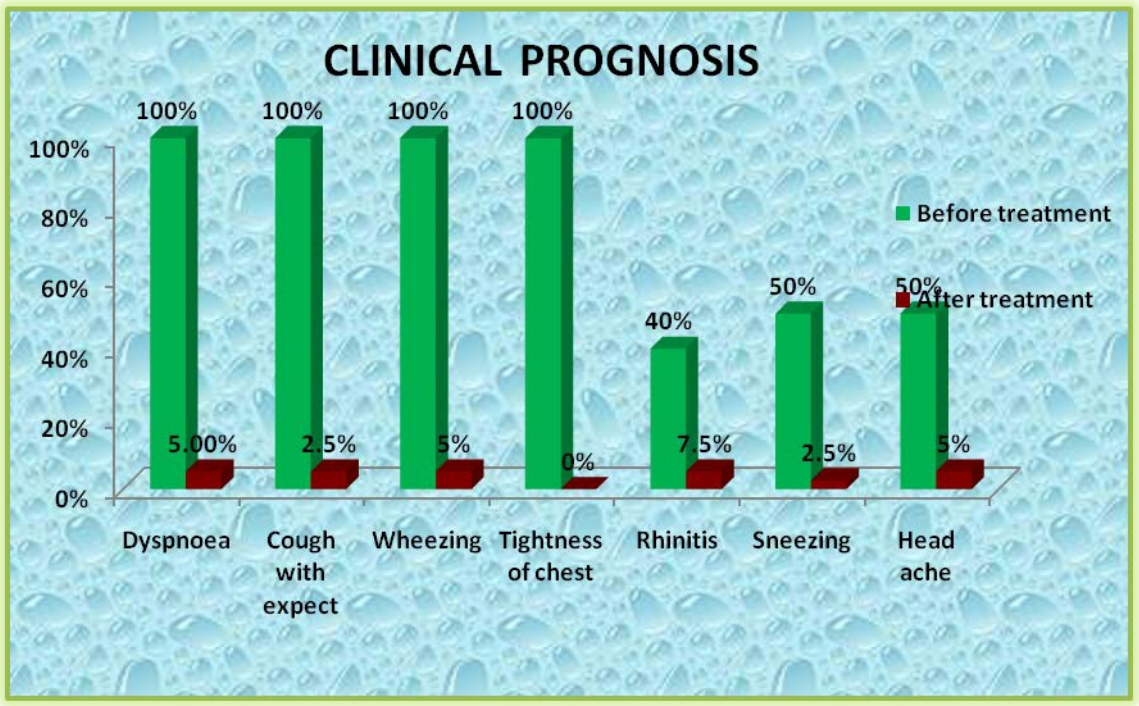


Inference:

Out of 40 patients, 40 patients (100%) had Dyspnoea, 40 patients (100%) had Cough with expectoration,40 patients (100%) had Wheezing, 40 patients (100%) had Tightness of chest, 16 patients (40%) had Rhinitis, 20 patients (50%) had Sneezing, 10 patients (25%) had Head ache.

15. CLINICAL PROGNOSIS

S. No	Signs&Symptoms	Before Treatment		After Treatment	
		No. of cases	Percentage (%)	No. of cases	Percentage (%)
1.	Dyspnoea	40	100%	2	5%
2.	Cough with Expectoration	40	100%	2	5%
3.	Wheezing	40	100%	2	5%
4.	Tightness of chest	40	100%	0	0
5.	Rhinitis	16	40%	2	5%
6.	Sneezing	20	50%	1	2.5%
7.	Head ache	10	50%	2	5%

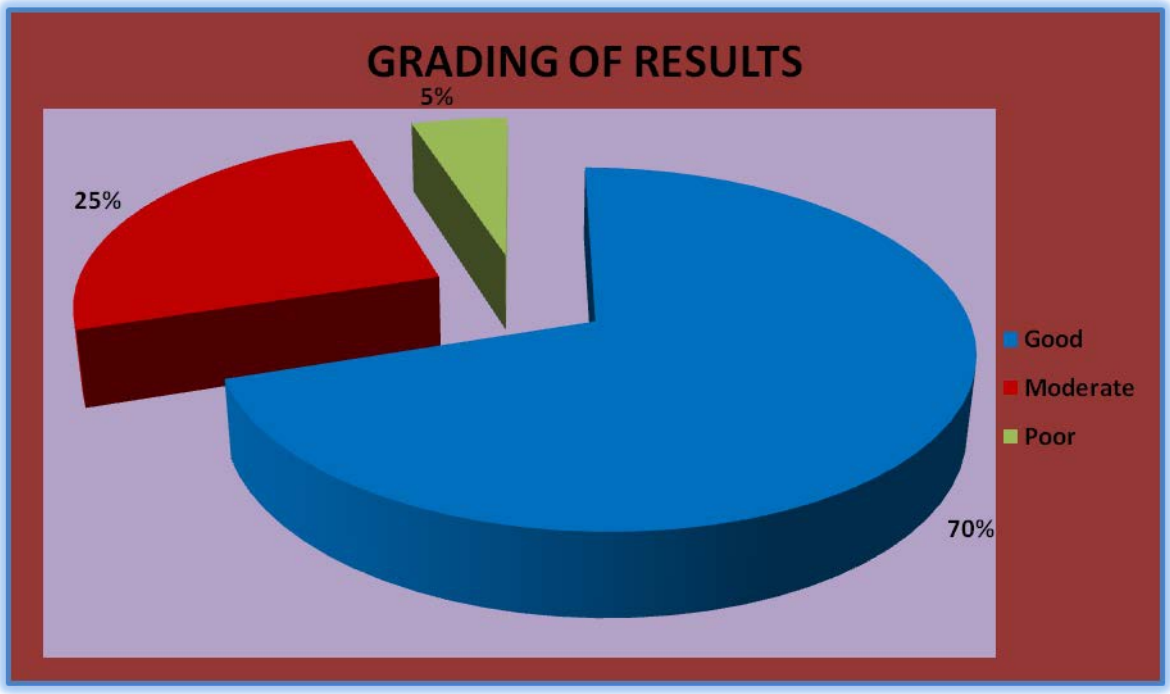


Inference:

After trearment Dyspnoea present in 2 patients (5%), Cough with expectoration present in 1 patients(2.5%),Wheezing present in 2 patient (5%), Rhinitis present in 2 patients(5%), Sneezing present in 1 patient (2.5%), Head ache present in 2 patient (5%)

16. GRADING OF RESULTS

S. No	Grading of results	No. Of cases	Percentage (%)
1.	Good	28	70%
2.	Moderate	10	25%
3.	Poor	2	5%



Inference:

Out of 40 patients, 28 cases (70%) shows good result, 10 cases (25%) shows moderate result, 2 cases (5%) shows poor result.

PEAK EXPIRATORY FLOW RATE

S. no	NAME	BeforeTreatment L/mnt	AfterTreatment L/mnt
1.	Munusamy	120	240
2.	Kumaresan	200	310
3.	Bama	210	330
4.	Durgadevi	200	320
5.	Jaganathan	190	300
6.	Padmavathy	140	280
7.	Bharathy	170	290
8.	Saraswathy	110	200
9.	Thilaga	130	210
10.	Vijayakumar	120	240
11.	Vaiyapuri	140	270
12.	Murugesan	100	210
13.	Rani	110	240
14.	Guna	150	230
15.	Saravana bavanantham	130	260
16.	Shanbegam	170	240
17.	Kumar	120	200
18.	Suganya	120	250
19.	Nanthagopal	150	260
20.	Narayanan	170	220
21.	Vani	140	270
22.	Adilakshmi	170	290
23.	Rupchand	110	200
24.	Lalitha	130	210
25.	Vedavalli	150	290
26.	Neelagandan	160	200
27.	Subramani	200	410
28.	Nagavalli	150	240
29.	Pakiri samy	190	230
30.	Yamuna	200	270
31.	Sengani	290	310
32.	Mary finoth	100	210
33.	Chandrasekar	120	250
34.	Sowndarjan	180	310
35.	Kathavarayan	200	330
36.	Manimuthu	150	290
37.	Amutha	190	310
38.	Usha	120	240
39.	Jaya pandian	140	270
40.	Parvatham	120	250

PEFR Prognosis Range:
Grading of Results:

S. no	PEFR Prognosis Range	No. Of patients	Percentage %
1.	Above 100	27	67.5%
2.	100 – 50	10	25%
3.	Below 50	3	7.5%

SL. NO.	OP. NO.	NAME	AGE/Sex	HEAMOTOLOGICAL REPORT														URINE ANALYSIS						STOOL EXAMINATION			
				BEFORE TREATMENT				AFTER TREATMENT				ESR(mm)				HB(Gm)		BT			AT			BT		AT	
				TC (Cu/mm)	DC			TC (Cu/mm)	DC			BT		AT		BT	AT										
					P	L	E		P	L	E	½ Hr	1 Hr	½ Hr	1 Hr			Alb	Sug	Dep	Alb	Sug	Dep	Ova	Cyst	Ova	Cyst
1.	69	Munusamy	38/M	9600	55	39	6	9,800	56	38	6	2	4	2	4	15	13	Nil	Nil	OEC	Nil	Nil	Nil	Nil	Nil	Nil	Nil
2.	688	Kumaresan	41/M	9700	58	35	7	10,400	58	39	3	5	8	6	12	13	14.5	Nil	Nil	OEC	Nil	Nil	OPC	Nil	Nil	Nil	Nil
3.	545	Bama	63/F	9000	57	38	5	11,000	59	37	4	8	11	6	12	12	12.5	Nil	Nil	OEC	Nil	Nil	OPC	Nil	Nil	Nil	Nil
4.	8221	Durgadevi	32/F	9400	55	36	9	9,700	58	36	6	9	11	8	16	12	12.5	Nil	Nil	FEC	Nil	Nil	Nil	Nil	Nil	Nil	Nil
5.	9800	Jaganathan	55/M	9600	60	37	3	11,300	55	35	6	8	16	4	8	12.6	12	Nil	Nil	FEC	Nil	Nil	Nil	Nil	Nil	Nil	Nil
6.	9507	Padmavathy	62/F	9000	56	40	4	11,600	56	35	4	53	80	10	14	12.4	12.5	Nil	Nil	OPC	Nil	Nil	Nil	Nil	Nil	Nil	Nil
7.	8463	Bharathy	42/F	9400	55	39	6	10,100	62	34	4	32	54	4	10	12	12.8	Nil	Nil	FPC	Nil	Nil	Nil	Nil	Nil	Nil	Nil
8.	6792	Saraswathy	40/F	8700	54	39	7	10,000	62	28	4	20	41	6	10	9.4	13	Nil	Nil	FEC	Nil	Nil	OPC	Nil	Nil	Nil	Nil
9.	806	Thilaga	34/F	9200	53	40	7	9,500	58	30	3	20	45	3	6	12.6	15	Nil	Nil	FEC	Nil	Nil	Nil	Nil	Nil	Nil	Nil
10.	6184	Vijayakumar	78/M	8000	56	38	6	9,800	55	35	6	7	20	8	16	12.8	13.7	Nil	Nil	OPC	Nil	Nil	Nil	Nil	Nil	Nil	Nil
11.	6537	Vaiyapuri	65/M	9400	55	39	6	10,000	56	35	4	7	18	4	8	14	15	Nil	Nil	FPC	Nil	Nil	Nil	Nil	Nil	Nil	Nil
12.	6907	Murugesan	38/M	10300	60	27	13	10,100	58	34	5	9	11	10	14	12	14.6	Nil	Nil	FPC	Nil	Nil	Nil	Nil	Nil	Nil	Nil
13.	5918	Rani	46/F	10000	57	33	10	9,800	65	40	6	12	40	4	10	10.8	12	Nil	Nil	OEC	Nil	Nil	Nil	Nil	Nil	Nil	Nil
14.	631	Guna	48/F	9600	57	39	4	10,400	55	32	5	24	60	6	10	8	12.8	Nil	Nil	FEC	Nil	Nil	Nil	Nil	Nil	Nil	Nil
15.	7991	Saravana bavanantham	63/M	9700	60	36	9	9,600	59	35	6	2	7	3	6	13.8	14.2	Nil	Nil	OPC	Nil	Nil	OPC	Nil	Nil	Nil	Nil
16.	6318	Shanbegam	40/F	9700	58	39	3	9,900	60	37	4	30	64	4	10	10.8	13	Nil	Nil	FPC	Nil	Nil	Nil	Nil	Nil	Nil	Nil
17.	6230	Kumar	43/M	9600	57	39	4	9,700	55	32	5	8	20	6	10	13	12.8	Nil	Nil	Nil	Nil	Nil	OPC	Nil	Nil	Nil	Nil
18.	5999	Suganya	34/F	9700	58	36	6	9,800	57	28	3	30	56	3	6	10.4	12.5	Nil	Nil	FEC	Nil	Nil	OPC	Nil	Nil	Nil	Nil
19.	492	Nanthagopal	21/M	8600	52	39	4	9,700	58	35	7	11	20	9	18	12	14.1	Nil	Nil	OPC	Nil	Nil	OPC	Nil	Nil	Nil	Nil
20.	9011	Narayanan	74/M	9100	58	34	8	11000	58	37	2	15	34	3	6	10.4	13	Nil	Nil	FEC	Nil	Nil	FPC	Nil	Nil	Nil	Nil

LABORATORY INVESTIGATION REPORT (OP)

TC – Total Count
Dc – Differential Count
P – Polymorph
L – Lymphocyte
E – Eosinophil

Hb – Haemoglobin
ESR – Erythrocyte Sedimentation Rate
Alb – Albumin
Sug – Sugar
Dep – Deposits

OEC – Occasional Epithelial Cells
OPC – Occasional Pus Cells
FPC – Few Pus Cells
FEC – Few Epithelial Cells

LABORATORY INVESTIGATION REPORT (IP)

SL. NO.	IP. NO.	NAME	AGE/Sex	HEAMOTOLOGICAL REPORT														URINE ANALYSIS						STOOL EXAMINATION			
				BEFORE TREATMENT				AFTER TREATMENT				ESR(mm)				HB(Gm)		BT			AT			BT		AT	
				TC (Cu/mm)	DC			TC (Cu/mm)	DC			BT		AT		BT	AT										
					P	L	E		P	L	E	½ Hr	1 Hr	½ Hr	1 Hr			Alb	Sug	Dep	Alb	Sug	Dep	Ova	Cyst	Ova	Cyst
1.	831/5346	Vani	35/F	11,300	55	35	6	9,700	55	32	5	9	11	8	16	13.2	13	Nil	Nil	FPC	Nil	Nil	Nil	Nil	Nil	Nil	Nil
2.	772/4366	Adilakshmi	58/F	11,600	56	35	4	9,800	57	28	3	8	16	4	8	15	14.5	Nil	Nil	FEC	Nil	Nil	OPC	Nil	Nil	Nil	Nil
3.	261/7848	Rupchand	67/M	10,100	62	34	4	9,700	58	35	7	53	80	10	14	12.2	12.5	Nil	Nil	FEC	Nil	Nil	OPC	Nil	Nil	Nil	Nil
4.	483/875	Lalitha	58/F	9,600	59	35	6	10,600	60	36	3	32	54	4	10	12.4	12.5	Nil	Nil	OPC	Nil	Nil	Nil	Nil	Nil	Nil	Nil
5.	106/9955	Vedavalli	60/F	9,900	60	37	4	9,700	55	32	5	20	41	6	10	12	12	Nil	Nil	FPC	Nil	Nil	Nil	Nil	Nil	Nil	Nil
6.	133/1068	Neelagandan	48/M	9,700	55	32	5	11,400	60	35	3	20	45	3	6	13	12.5	Nil	Nil	OEC	Nil	Nil	Nil	Nil	Nil	Nil	Nil
7.	502/8528	Subramani	60/	11,300	55	35	6	10,100	62	34	4	7	20	8	16	13	12.8	Nil	Nil	FEC	Nil	Nil	Nil	Nil	Nil	Nil	Nil
8.	1190/108	Nagavalli	50/F	10,100	62	34	4	11,300	55	35	6	11	32	6	10	12	13	Nil	Nil	OPC	Nil	Nil	OPC	Nil	Nil	Nil	Nil
9.	527/6124	Pakiri samy	70/M	9,600	59	35	6	11,600	56	35	4	3	7	3	6	15	15	Nil	Nil	FPC	Nil	Nil	Nil	Nil	Nil	Nil	Nil
10.	1305/3643	Yamuna	64/F	9,900	60	37	4	10,100	62	34	4	10	20	9	18	13.8	13.7	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
11.	835/6587	Sengani	64/M	9,700	55	32	5	9,600	59	35	6	2	4	3	6	14.8	15	Nil	Nil	FEC	Nil	Nil	Nil	Nil	Nil	Nil	Nil
12.	175/213	Mary finoth	74/F	9,800	57	28	3	9,900	60	37	4	6	10	5	12	14.6	14.6	Nil	Nil	OEC	Nil	Nil	Nil	Nil	Nil	Nil	Nil
13.	245/3242	Chandrasekar	32/M	9,700	58	35	7	9,700	55	32	5	11	20	7	12	11	12	Nil	Nil	OEC	Nil	Nil	Nil	Nil	Nil	Nil	Nil
14.	157/2465	Sowndarjan	32/M	10,600	60	36	3	11,300	55	35	6	15	25	10	13	13	12.8	Nil	Nil	FEC	Nil	Nil	Nil	Nil	Nil	Nil	Nil
15.	17/4741	Kathavarayan	70/M	9,800	60	34	8	10,700	55	36	3	15	30	12	18	14	14.2	Nil	Nil	OPC	Nil	Nil	OPC	Nil	Nil	Nil	Nil
16.	170/206	Manimuthu	70/M	11,000	58	40	4	11,000	55	42	3	5	22	4	10	12.8	13	Nil	Nil	FPC	Nil	Nil	Nil	Nil	Nil	Nil	Nil
17.	297/5513	Amutha	72/F	10,500	55	42	5	9,800	56	38	6	5	10	8	16	13	12.8	Nil	Nil	Nil	Nil	Nil	OPC	Nil	Nil	Nil	Nil
18.	27/3210	Usha	54/F	9,800	56	40	2	10,400	58	39	3	3	5	4	8	12.4	12.5	Nil	Nil	FEC	Nil	Nil	OPC	Nil	Nil	Nil	Nil
19.	203/9851	Jaya pandian	46/M	11,400	60	35	3	11,000	59	37	4	7	12	10	14	14	14.1	Nil	Nil	OPC	Nil	Nil	OPC	Nil	Nil	Nil	Nil
20.	239/1114	Parvatham	74/M	10,100	62	34	4	9,700	58	36	6	3	5	4	10	13	13	Nil	Nil	FEC	Nil	Nil	FPC	Nil	Nil	Nil	Nil

TC – Total Count

Dc – Differential Count

P – Polymorph

L – Lymphocyte

E – Eosinophil

Hb – Haemoglobin

ESR – Erythrocyte Sedimentation Rate

Alb – Albumin

Sug – Sugar

Dep – Deposits

OEC – Occasional Epithelial Cells

OPC – Occasional Pus Cells

FPC – Few Pus Cells

FEC – Few Epithelial Cells

Discussion

DISCUSSION

Swasa kasam, a clinical entity described by Yugi munivar in his Yugi Vaidhya Chinthamani 800. The classical symptoms are Dyspnoea, Cough with expectoration, Tightness of chest, Rhinitis, Sneezing. These features can be well compared with Bronchial asthma.

20 patients were selected and admitted in the inpatient Department, Pothumaruthuvam, Government Siddha medical College, attached to Arignar Anna Hospital, Arumbakkam, Chennai -106.

All necessary investigations were carried out to all patients and trial medicines were given. Regular daily follow up were done. All the patients were strictly advised to attend the O.P after discharged from in patient ward.

Another 20 patient were treated in out patient department. All the patients were advised to follow diet restriction with Yogasanam and Pranayamam.

Sex:

Out of 40 patients, 19 cases (47.5%) were male and 21 cases (52.5%) were female.

Age:

From selected 40 cases, High incidence of cases was noted in age ranging of 31-40 during the study. This is because of the change in food habits, occupational, seasonal and environmental factors and also due to smoking etc.

Socio-economic status:

Regarding socio-economic status 28 patients (70%) comes under poor category, 9 patients (22.5%) comes under middle class category, and 3 patients (7.5%) comes under high class category. People living in poor socio-economic status were more affected due to poor hygiene, polluted environment and malnutrition diet.

Occupation:

Out of 40 patients, 9 patients (22.5%) were industry, 2 patients (5%) were watch man, 21 patients (52.5%) were house wife, 8 patients (20%) were in other

occupation. They are more prone to occupational hazards like exposure to industrial fumes, smokes, chemicals, dust, polluted environment pollens etc., which enhance the severity of **Swasa kasam.**

Personal Habits:

Regarding personal habits, 11 patients (27.5%) were smoker, 3 patients (7.5%) were Alcoholic, 5 patients (12.5%) were betalnut & Tobacco chewer, and 2 patients (5%) were snuff users

Diet:

Regarding diet 9 patients (22.5%) takes vegetarian diet and 37 patients (77.5%) takes mixed diet.

Kaalam:

Out of 40 patients, 3 patients (7.5%) comes under Vali kaalam, 21 patients (52.5%) comes under Azhal kaalam, and 16 patient (40%) comes under Iyya kaalam.

Paruva kaalam:

From selected 40 patients, 15 patients (37.5%) comes under Kaarkaalam, 7 patients (20%) comes under Koothirkaalam, 8 patient (20%) comes under Munpani, 2 Patient (5%) comes under Elavenil, 8 patients (20%) comes under Mudhuvenil kaalam

Thinai:

Out of 40 patients, 2 patient (5%) comes under kurinji, patient (22.5%) comes under marudham, 29 patient (72.5%) comes under Neithal category.

Duration of illness:

Out of 40 patients, 12 patients (30%) belongs to Up to one month category, and 6 patients (15%) belongs to 2-3 months category, 12 patients (30%) belongs to 3 months to one year category, 10 patients (25%) belongs to more than one year category.

OBSERVATION OF ALTERED MUKKUTRAM

Vali:

From the selected 40 patients, pranan was affected in 40 patients (100%), Abanan in 20 patients (50%), Viyanan was affected in 40 patients (100%), Udhanan in 40 patients (100%), samanan in 16 patients (40%),

Koorman in 6 patients (15%), Kirugaran in 16 patients (40%), Devathathan in 18 patients (45%).

Azhal:

Out of 40 patients Analagam was affected in 16 patients (40%), Ranjagam was affected in 5 patients (25%), Sathagam was affected in 40 patients (100%), Aalosagam was affected in 6 patients (15%).

Iyyam:

Out of 40 patients, Avalambagam was affected in 40 patients (100%), Kiledhagam was affected in 16 patients (40%), Santhigam was affected in 12 patients (30%).

Ezhu udalkattugal:

Out of 40 cases, Saaram was affected in 40 patients (100%), Senneer was affected in 10 patients (25%), Enbu was affected in 12 patients (30%).

Envagai thervu:

Regarding Envagai thervu, Naa (coated) was affected in 10 patients (25%), Niram was affected in 10 patients (25%), Mozhi was affected in 40 patients (100%), Vizhi was affected in 6 patients (15%), and Malam was affected in 20 patients (50%).

Naadi:

20 patients had Vali iyya naadi and 20 patients had Azhal iyya Naadi.

Neikuri:

In Neikuri, 20 patients (50%) had vatha neer, 4 patients (10%) had Pitha neer, 16 patients (40%) had Kabha neer.

Signs & Symptoms:

Out of 40 patients, 40 patients (100%) had Dyspnoea, 40 patients (100%) had Cough with expectoration,40 patients (100%) had Wheezing, 40 patients (100%) had Tightness of chest, 16 patients (40%) had Rhinitis, 20 patients (50%) had Sneezing, 10 patients (25%) had Head ache.

Peak expiratory flow rate:

Out of 40 patients, 27 patients (67.5%) shows good result and 10 patients (25%) shows moderate result, 3 patients (7.5%) shows poor result.

Episodes of Wheezing:

Out of 40 patients, Episodes of wheezing reduced in 70% of patients.

Investigation:

Investigations like TC, DC, ESR, Hb, Blood sugar, Serum Cholesterol, Blood urea were examined and urine analysis for albumin, sugar and deposits were taken. Sputam for AFB, X-Ray chest PA view and Peak expiratory flow rate were taken.

Suvai-Mukkutra Theory:

Swasa kasam is caused by the derangement of Iyya kutram which accompany with Vali kutram. The five properties, Suvai (Taste), Gunam (Property), Veeriyam (Potency), Pirivu (class) and Mahimai (action) will bring all the kutrams and kattugal to its normal limit. Linga mathirai has the following features of Suvai and Veeriyam.

S. No	Drug	Suvai	Veeriyam
1.	Lingam	-	Veppam
2.	Vengaram	Inippu, Thuvarppu	Veppam
3.	poondu	Kaarpu	Veppam

The predominant veeriyam present in Linga maathirai is veppam.

The predominant suvai present in Linga maathirai is kaarppu.

Dose:

130 mg. 1 tablet, Tds , with water.

The deranged kutram in swasa kasam is kabam, the bootham is man + neer. The prepared trial drug has kaarppu suvai. The bootham is vali+ thee. So predominant suvai present in linga maathirai which brings the deranged iyya kutram is normal. Hence, the treatment is based on ETHIRURAI MARUTHUVAM.

Clinical Study:

All the patients were treated with Linga mathirai for an average of 48 days. Blood and urine were once again tested after the completion of treatment.

Bio chemical analysis:

The results of Bio-chemical analysis reveals that Naayuruvi kuzhi thylam contains, Acid radicals such as Sulphate and Phosphate. Basic radicals such as Calcium, Potassium, and Ammonoum.

Pharmacological study:

Pharmacological study reveals that Linga mathirai contains Anti-histamine and Bronchodilator activity. It was safe, well tolerated and did not produce any toxicity

Bio statistical analysis:.

The p value is significant (<o.o1), The hypothesis is not accepted. So there is significant reduced symptoms among the patients for the treatment of Swasa kasam. Hence it is concluded that the treatment was effective and significant

All the patients were advised to practice Pranayamam and Yogasanam.

Out of 40 patients 70% of cases shows good result, 25% of the cases shows moderate result and 5% of cases shows poor result.

From the above all clinical assessment and results show good and encourage.

Summary

SUMMARY

The clinical study on SWASA KAASAM was carried out in Post graduate department of Maruthuvam, Government Siddha Medical College, Arignar Anna Hospital, Chennai –106 during the period of 2011-2012.

A total of 40 patients were treated in the O.P and I.P department. The clinical and pathological assessment was carried out on the basis of both Siddha and modern aspects.

All the 40 patients were treated with Linga maathirai (1 tablet tds daily with water). The duration of the treatment was fixed as 45 days. The responses were assessed once in 7 days for all the patients.

- The peak incidence of Swasa kasam was found to be in 31-40 years of age group of both sex.
- The prevalence of the disease was high among lower class population 70%, Middle class 22.5%, and High class population 7.5%.
- Out of 40 patients, 22.5%were industry, 5% were watch man, 52.5% were house wife, 20% were other workers.
- Among dietary patterns, 77.5% patients consume Mixed diet.
- Regarding personal habits, 27.5% were smoker, 7.5% were Alcoholic, 12.5% were betalnut & Tobacco chewer, and 5% were snuff users.
- Out of 40 patients, 7.5% comes under Vali kaalam, 52.5% comes under Azhal kaalam, and 40% comes under Iyya kaalam.
- From selected 40 patients, 37.5% comes under Kaarkaalam, 17.5% comes under Koothirkaalam, 20% comes under Munpani, 5% comes under Elavenil, 20% comes under Mudhuvenil kaalam
- In vatham - Pranan, Udhanan and Vyanan (100%),Kirugaran (40%), Samanan(40%), Abanan (20%) Devadhathan (45%), Koorman (15%)were affected.
- In pitham - Sadhaga Pitham (100%), Ranjaga pitham (25%), Aanalagam (37.5%), Aalosagam (15%) were affected.
- In Kapham - Avalambagam (100%) and Kilethagam (40%), and Santhigam (30%) were affected.

- Among Ezhu Udal Kattugal, Saaram, (100%), Enbu (30%) and Seneer (25%) were affected.
- Among Envagai Thervugal, Vizhi (15%), Niram (25%), Naa (25%), Mozhi (100%), and Malam (50%) were affected.
- Naadi in Swasa kasam patients felt as, Vali iyya naadi (50%) and Azhaliyyam naadi (50%).
- The Neikuri examination 50% show Vatha neer, 10% Pitha neer, 40% shows Kabha neer.
- Out of 40 patients, 28 patients (70%) shows good result and 10 patients (25%) shows moderate result, 2 cases (5%) shows poor result.
- Regarding Peak expiratory flow rate, 67.5% shows good result and 25% shows moderate result,7.5% shows poor result.
- The ingredients of trial medicines were found to have the properties of controlling Swasa kasam.
- The clinical trial conducted in selected patients were satisfactory and encouraging.
- The Pharmacological studies of the trail medicine shows good result.
- The bio-statistical report of the clinical trial shows significant result P value <0.01**.**
- Among 40 cases, 70% of the cases show good results and 25% of the cases show moderate result, 5% of the cases shows poor result.

Conclusion

CONCLUSION

- Swasa kasam is primarily due to the derangement of Vali and Iyya kutram.
- The trial medicines **Linga maathirai** predominating kaarpu suvai neutralizes the deranged Iyya kutram.
- Linga maathirai did not produce any toxicity in preclinical study. So it is a very safe drug for Swasa kasam.
- From the preclinical pharmacological studies it is evident that the trial medicines have Anti histamine and Broncho dilator activity.
- No contra indication was reported during the course of the treatment.
- The trial medicines gave maximum relief from the symptoms of Swasa kasam.
- The preparation of trial medicine is easy and economical.
- Therefore I conclude the trial drug for disease swasa kaasam was statisfactory and encouraging.

Annexures

Certificates

The Tamil Nadu Dr. M.G.R. Medical University

69, Anna Salai, Guindy, Chennai-600 032

This Certificate is awarded to Dr N.T. PARTHIBAN

for participating as a ~~Resource~~ ~~Person~~ / Delegate in the VI Workshop on

"Research Methodology & Biostatistics"

for AYUSH Post-Graduates & Researchers

organized by the Department of Siddha

The Tamil Nadu Dr. M.G.R. Medical University

from 12th September 2011 to 16th September 2011

Dr. MAYILVAHANAN NATARAJAN
M.S.Orth. M.Ch.Orth. (L'pool) Ph.D. D.Sc. F.R.C.S. D.Sc. (Hon)^3
VICE CHANCELLOR

Dr. SUDHA SESHAYYAN, M.S.
REGISTRAR (FAC)

Dr. N. KABILAN, M.D. (Siddha)
READER, DEPT. OF SIDDHA

VEL'S COLLEGE OF PHARMACY

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S.No	Title of The Project	Name of The Investigator	Approval status/Remarks	Project Reference
14.	Toxicological study – anti histamine, anti inflammatory activity on karunchembai ilai choornam.	Dr. B. Kanimozhi	The candidate proposed 36 rats and 36 mice for the experimentation. But, experts suggested that the study data can be shared with other co workers. So, it is advised to minimize the number to 10 rats and 25mice and one guinea pig were sanctioned.	XIII/VELS/PCOL/ 14/2000/CPCSEA/I AEC/11.08.2012
15.	A study on *Lingathi Maathirai* for the treatment of Swasakasam.	Dr. N. T. Parthiban	Total number of animals proposed were 48 rats and as per the members suggestion three (S,T,N) group of animals data will be shared. So, totally 35animals were sanctioned.	XIII/VELS/PCOL/ 15/2000/CPCSEA/I AEC/11.08.2012
16.	Acute toxicity, Analgesic, Anti Inflammatory study on herbal drug Karuvilanchi Ver Choornam.	Dr. I. Nithya Mala	The candidate proposed 36 rats and 36 mice for the experimentation. But, experts suggested that the study data can be shared with other co workers. So, it is advised to minimize the number to 10 rats and 25mice were sanctioned.	XIII/VELS/PCOL/ 16/2000/CPCSEA/I AEC/11.08.2012

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Bio-chemical analysis

BIO-CHEMICAL ANALYSIS OF TRIAL MEDICINES

Preparation of Sodium Carbonate extract:

2 gm of the sample drug is mixed 5 gm of Sodium carbonate and taken in a 100 ml beaker and 20 ml of distilled water is added. The solution is boiled for 10 minutes, cooled and then filtered. The filtrate is called sodium carbonate extract.

S.No.	Experiment	Observation	Inference
1	**Test for Acid Radicals**		
a.	**Test for Sulphate** 2 ml of the above prepared extract is taken in a test tube. To this add 2ml of 4% Ammonium oxalate solution.	Absence of White Precipitate	Absent
b.	2ml of extract is added with 2ml of dilute hydrochloric acid until the effervescence ceases off. Then 2ml barium chloride solution is added.	Absence of White Precipitate	Absent
2.	**Test for Chloride:** 2ml of extract is added with dilute nitric acid till the effervescence ceases. Then 2ml of silver nitrate solution is added.	white precipitate obtained	Present

3.	**Test for Phosphate** 2ml of the extract is treated with 2 ml of Ammonium molybdate solution and 2ml of concentrated nitric acid.	Absence of Yellow Precipitate	Absent
4.	**Test for Carbonate:** 2ml of the extract is treated with 2ml of magnesium sulphate solution.	Absence of white precipitate	Absent
5.	**Test for Sulphide:** 1 gm of the substance is treated with 2ml of concentrated Hydrochloric acid	Absence of Rotten egg smelling	Absent
6.	**Test for Nitrate:** 1gm of the substance is heated with copper turnings and concentrated sulphuric acid and viewed the test tube vertically down.	Absence of reddish brown gas.	Absent
7. a.	**Test for Fluoride and oxalate** 2ml of the extract is added with 2ml of dilute acetic acid and 2ml of calcium chloride solution and heated.	Absence of white precipitate	Absent
b.	5 drops of clear solution is added with 2ml of dilute sulphuric acid and slightly warmed to this, 1 ml of dilute potassium permanganate solution is added.	Absence of KMNO4 solution discolourisation.	Absent
8.	**Test for Nitrite** 3 drops of the extract is placed on a filter paper. On that, 2 drops a Acetic Acid and 2 drops of Benzidine solution is placed.	Absence of yellowish red colour	Absent
9.	**Test for Borate** 2 pinches of the substance is made into paste by using Sulphuric acid and Alcohol (95%) and introduced into the blue flame.	Absence of Green tinged flame	Absent
II.	**TEST FOR BASIC RADICALS**		

10.	**Test for lead** 2 ml of the extract is added with 2 ml of Potassium iodide solution	Absence of Yellow precipitate	Absent
11a	**Test for Copper** One pinch of substance is made into paste with concentrated Hydrochloric acid in a watch glass and introduced into the non luminous part of the flame.	Absence of Bluish green coloured flame.	Absent
b.	2ml of the extract is added with excess of Ammonia solution	Absence of deep blue	Absent
12.	**Test for Aluminium** To the 2 ml of extract. Sodium Hydroxide solution is added in drops to excess.	Absence of White precipitate.	Absent
13a	**Test for Iron** To the 2 ml of extract, 2 ml of Ammonium Thiocyanate solution is added.	Absence of Blood red colour	Absent
b.	To the 2 ml of extract, 2 ml of Ammonium Thiocyanate solution and 2 ml of concentrated Nitric Acid is added.	Absence of Blood red colour.	Absent
14.	**Test for Zinc** To the 2 ml of extract Sodium Hydroxide solution is added in drops to excess.	White precipitate Obtained .	Present
15.	**Test for Calcium** 2 ml of the extract is added with 2 ml of 4% Ammonium Oxalate solution.	Absence of White precipitate.	Absent
16.	**Test for Magnesium** 2ml of extract, Sodium Hydroxide solution is added in drops to excess.	Absence of White precipitate.	Absent
17.	**Test for Ammonium** 2 ml of extract few ml of Nessler's Reagent and excess of Sodium Hydroxide solution are added.	Absence of Reddish brown precipitate .	Absent
18.	**Test for Potassium** A pinch of substance is treated	Yellow precipitate Obtained.	Present

	with 2 ml of Sodium Nitrite solution and then treated with 2 ml of Cobal Nitrate in 30% glacial Acetic acid.		
19.	**Test for Sodium** 2 pinches of the substance is made into paste by using Hydrochloric acid and introduced into the blue flame .	Absence of Yellow colour flame	Absent
20.	**Test for Mercury** 2 ml of the extract is treated with 2 ml of Sodium Hydroxide solution.	Absence of yellow precipitate	Absent
21.	**Test for Arsenic** 2 ml of extract is treated with 2 ml of silver Nitrate solution	Absence of Yellow precipitate.	Absent
22.	**Test for Starch** 2ml of extract is treated with weak iodine solution	Absence of Bluecolour..	Absent
23.	**Test of reducing Sugar** 5ml of Benedicts qualitative solution is taken in a test tube and allowed to boil for 2 minutes and added 10 drops of the extract and again boiled for 2 minutes. The colour changes are noted.	Green colour is obtained.	Present
24.	**Test of the alkaliods** 2ml of the extract is treated with 2ml of potassium lodide solution.	Absence of Red colour.	Absent
25.	**Test of the proteins** 2ml of the extract is treated with 2ml of 5% NaOH ,mix well and add 2 drops of copper sulphate solution.	Absence of Violet colour.	Absent

RESULTS:

The given sample contains.

Drug Name : Linga maathirai.

1. Chloride
2. Zinc
3. Pottassium
4. Reducing sugar

Toxicological study

ACUTE AND SUB ACUTE TOXICITY STUDY ON LINGATHI MATHIRAI

Animals:

Mice of either sex weighing 25-30g and rats weighing 210-240g were obtained from the animal house of Vels University. The animals were used with the approval of the Institute animal ethics committee and obtained from Vels University, Chennai. They were fed with a balanced standard pellet diet and maintained under standard laboratory conditions, providing 24-28^{0}C temperature, standard light cycle (12 h light, 12 h dark) and water ad libitum. Animals were kept in cages with raised floors of wide mesh to prevent coprophagy. Animal welfare guidelines were observed during the maintenance period and experimentation. The rats were randomly assigned to control and different treatment groups, six animals per group. (XIII/VELS/PCOL/15/2000/CPCSEA/IAEC/08.08.2012). The animals were acclimatized for one week under laboratory conditions.

ACUTE TOXICITY STUDY-OECD 425 GUIDELINES

Acute oral toxicity test for the Lingathi Mathirai was carried out as per OECD Guidelines 425. As with other sequential test designs, care was taken to ensure that animals are available in the appropriate size and age range for the entire study. The test substance is administered in a single dose by gavage using a stomach tube or a suitable intubation cannula. The fasted body weight of each animal is determined and the dose is calculated according to the body weight. After the substance has been administered, food was withheld for a further 2 hours in mice. The animals were observed continuously for the first 4 h and then each hour for the next 24 h and at 6 hourly intervals for the following 48 h after administering of the test drug, to observe any death or changes in general behaviour and other physiological activities. Single animals are dosed in sequence usually at 48 h intervals. However, the time interval between dosing is determined by the onset, duration, and severity of toxic

signs. Treatment of an animal at the next dose was delayed until one is confident of survival of the previously dosed animal.

Observation of toxicity signs: General behavior, respiratory pattern, cardiovascular signs, motor activities, reflexes, change in skin and fur, mortality and the body weight changes were monitored daily. The time of onset, intensity, and duration of these signs, if any, was recorded.

SUB-ACUTE TOXICITY

In a 28-days sub acute toxicity study, twenty four either sex (3+3) rats were divided into four groups of 6 rats each. Group I that served as normal control was administered with distilled water (p.o.) while groups II, III and IV were administered daily with the Lingathi Mathirai (p.o.) for 28 days at a dose of 1.0, 2.0 and 4.0 g/kg respectively. The animals were then observed daily for gross behavioural changes and any other signs of subacute toxicity. The weight of each rat was recorded on day 0 and weekly throughout the course of the study, food and water consumption per rat was calculated. At the end of the 28 days they were fasted overnight, each animal was anaesthetized with diethylether, following which they were then dissected and blood samples were obtained by cardiac puncture into heparinised tubes. The blood sample collected from each rat was centrifuged with 3000 X g at 4^{o}C for 10 min to separate the serum and used for the biochemical assays.

Hematological and blood biochemical analyses:

At the end of the study, all animals were kept fasted for 16-18 h and then anesthetized with anesthetic ether on the 28th day. Blood samples for hematological and blood chemical analyses were taken from retro orbital vein. Heparinized blood samples were taken for determining complete blood count (white blood cell count, differential white blood cell count, platelet count, red blood cell count, hematocrit, and hemoglobin) by semiautomated hematology analyzer. The serum from non-heparinized blood was carefully collected for blood chemistry and enzyme analysis (glucose, creatinine, total protein, albumin, total and direct bilirubins, serum glutamate-oxaloacetate transaminase

(SGOT), serum glutamate pyruvate transaminase (SGPT), and alkaline phosphatase (ALP)) were automatically determined using autoanalyzer.

Necropsy:

All rats were sacrificed after the blood collection. The positions, shapes, sizes and colors of internal organs were evaluated. The Spleen, Testes, Pancrea, Lung, Liver, Brain, Heart, Stomach, Intestine, Bone, Ovary, and Kidney tissues were excised from all rats to visually detect gross lesions, and weighed to determine relative organs' weights and preserved in 10% neutral formalin for histopathological assessment. The tissues were embedded in paraffin, and then sectioned, stained with haematoxylin and eosin and were examined microscopically.

Statistical analysis

Values were represented as mean ± SEM. Data were analysed using one-way analysis of variance (ANOVA) and group means were compared using the Tukey-Kramer Multiple Comparison Test using GraphPad Instat-V3 software. P values < 0.05 were considered significant.

RESULTS

1) All the animals from control and all the treated dose groups up to 400 mg/kg survived throughout the dosing period of 28 days.

2) No signs of major or significant intoxication were observed in animals from lower to higher dose groups during the dosing period of 28 days.

3) Animals from all the treated dose groups exhibited comparable body weight gain with that of controls throughout the dosing period of 28 days.

4) Food consumption of control and treated animals was found to be comparable throughout the dosing period of 28days.

5) Ophthalmoscopic examination, conducted prior to and at the end of dosing period on animals from control and all the treated dose groups did not reveal any abnormality.

6) Haematological analysis conducted at the end of the dosing period on day 28, revealed no significant abnormalities attributable to the treatment.

7) Biochemical analysis conducted at the end of the dosing period on day 28, revealed no remarkable abnormalities attributable to the treatment.

8) Functional observation tests conducted at termination revealed no abnormalities.

9) Urine analysis, conducted at the end of the dosing period in week 4 and at the end of recovery period in week 6, revealed no abnormality attributable to the treatment.

10) Organ weight data of animals sacrificed at the end of the dosing period was found to be comparable with that of respective controls.

11) Gross pathological examination did not reveal any abnormality.

12) Histopathological examination did not reveal any abnormality.

CONCLUSION:

Based on these findings, no toxic effect was observed upto 400mg/kg of Lingathi Mathirai over a period of 28 days. So, it can be concluded that the Lingathi Mathirai can be prescribed for therapeutic use in human with the dosage recommendations of upto 400mg/kg. body weight p.o.

Table 1: Dose finding experiment and its behavioral Signs of Toxicity

No	Dose mg/kg	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1.	**500**	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	**1000**	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	**2000**	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-

1. Alertness 2. Aggressiveness 3. Pile erection 4. Grooming 5. Gripping 6. Touch Response 7. Decreased Motor Activity 8. Tremors 9. Convulsions 10. Muscle Spasm 11. Catatonia 12. Muscle relaxant 13. Hypnosis 14. Analgesia 15.Lacrimation 16. Exophthalmos 17. Diarrhoea 18. Writhing 19. Respiration 20. Mortality

Table 2. Body wt (g) of albino rats exposed to Lingathi Mathirai for 28days.

Dose (mg/kg/day)	Days				
	1	**7**	**14**	**21**	**28**
Control	125.26±4.12	122.62±5.84	125.10±5.76	126.10±4.44	126.17±5.22
100	124.21±4.18	125.30±4.91	126.20±5.11	131.46±7.15	132.45±6.62
200	126.30±3.26	125.61±5.74	125.87±4.46	126.44±5.65	127.62±7.41
400	130.11±5.70	134.11±5.62	136.42±4.34	135.19±5.75	136.15±8.74

Values are mean ± S.E.M. (Dunnet't' test). $^{ns}P > 0.05$; Vs Control N=6.

Table 3. Food (g/day) intake of rats exposed to Lingathi Mathirai for 28days.

Dose (mg/kg/day)	Days (gms/rats)				
	1	**7**	**14**	**21**	**28**
Control	45.12±2.45	45.44±2.77	45.61±2.32	45.57±2.88	47.27±3.45
100	42.34±2.58	45.71±2.60	45.70±2.74	47.61±2.74	48.15±3.42
200	42.10±2.44	42.62±2.45	46.05±2.56	46.63±3.40	46.20±3.10
400	44.55±2.62	45.35±2.71	47.30±2.14	48.77±2.55	48.15±3.00

Values are mean ± S.E.M. (Dunnet't' test). $^{ns}P > 0.05$; Vs Control N=6.

Table 4. Water (ml/day) intake of rats exposed to Lingathi Mathirai for 28days.

Dose (mg/kg/day)	Days(ml/rat)				
	1	**7**	**14**	**21**	**28**
Control	52.44±2.42	51.22±3.58	52.46±3.15	52.21±3.12	52.11±3.43
100	51.50±2.15	51.1±3.12	51.00±3.16	52.14±3.15	54.25±2.14
200	51.12±2.50	53.10±3.40	54.27±3.40	52.34±2.24	55.10±3.12
400	50.43±3.44	52.22±3.10	50.12±3.02	51.25±3.10	55.16±3.10

Values are mean ± S.E.M. (Dunnet't' test). $^{ns}P > 0.05$; Vs Control N=6.

Table 5. Hematological parameters after 28days treatment with Lingathi Mathirai in rats.

Parameter	Control	100 mg/kg	200 mg/kg	400 mg/kg
RBC (millions/cu.mm)	5.12±0.30	5.14±0.30	5.33±0.32	5.79±0.31
Hb (g/dl)	13.20±1.3	13.50±1.2	13.30±1.4	13.21±1.4
PCV (%)	45.22±1.50	44.5±1.2	44.15±1.5	45.00±2.0
WBC(cells/cu.mm)	7325±341	7275±320	7304±382	7328±420
Neutrophil (%)	52.22±4.00	54.00 ±3.10	50.32±3.15	49.42±3.22
Lymphocytes (%)	44.02±2.23	45.2±3.1	48.18±3.0	48.22±3.4
Eosinophil's (%)	6.20±0.41	5.62±0.57	5.92±0.48	5.62±0.44
Monocytes (%)	4.2±0.2	3.3±0.2*	3.3±0.3*	3.5±0.2
Basophils (%)	0±0	0±0	0±0	0±0
Platelets (10^5 cells/cu.mm)	1.42±0.06	1.50±0.07	1.71±0.05**	1.45±0.04
MCV(Fl)	78.5±2.0	81.4±1.3	81.3±2.0	82.5±2.2
MCHC (pg)	25.1±1.0	24.22±1.7	25.1±1.2	26.52±1.6

Values are mean of 6 animals ± S.E.M. (Dunnett's test). *P<0.05; **P<0.01. N=6.

Table 6. Effect of treatment with Lingathi Mathirai on biochemical (LFT, RFT, Lipid Profile) Parameters in rats.

Parameter	Control	100 mg/kg	200 mg/kg	400 mg/kg
Glucose (mg/dL)	75.13±5.00	74.50±4.88	71.22±5.00	73.32±5.10
Total Bilirubin (mg/dL)	0.203±0.05	0.204±0.05	0.204±0.05	0.202±0.04
Bilirubin direct (mg/dL)	0.1±0.03	0.1±0.03	0.1±0.04	0.1±0.04
Creatinine (mg/dL)	0.90±0.04	0.91±0.05	0.93±0.03	0.92±0.04
BUN (mg/dL)	18.30±1.26	18.50±1.42	18.52±1.45	18.24±1.22
AST (IU/L)	122.24±5.10	126.14±6.52	125.12±5.30	125.4±5.44
ALT (IU/L)	34.14±3.32	32.28±2.57	34.45±2.15	35.90±2.24
ALP (IU/L)	77.52±4.27	78.10±4.04	69.28±4.30	68.15±4.00
Total cholestrol (mg/dL)	58.10±5.24	57.00±5.12	56.50±4.20	55.20±4.22
Total protein (g/dL)	8.00±0.71	7.48±0.55	7.42±0.62	7.67±0.72
Albumin (g/dL)	2.52±0.05	2.70±0.06*	2.70±0.04*	2.62±0.04
Urea(mg/dL)	54.41±2.98	56.00±3.88	55.11±2.54	56.14±1.72
Uric acid (mg/dL)	1.96±0.12	1.27±0.14**	1.30±0.13**	1.27±0.12**
Na m.mol	144.62±5.10	142.2±5.00	144.23±4.50	142.20±4.78
K m.mol	21.42±2.36	18.25±1.81	21.05±1.90	20.12±2.42**
Cl m.mol	101.22±4.12	100.42±4.08	102.82±5.00	100.11±5.02
HDL(mg/dL)	13.17±1.22	13.04±1.62	13.40±1.14	13.01±2.28
LDL(mg/dL)	42.45±2.82	42.2±3.00	42.52±3.15	42.45±3.13
VLDL(mg/dl)	16.40±2.02	16.17±2.41	16.30±1.70	15.41±1.50
Triglycerides (mg/dl)	85.54±3.00	86.16±2.01	87.11±2.32	87.72±2.42

Values are mean of 6 animals ± S.E.M. (Dunnet's test). *P<0.05; **P<0.01. Vs Control

Table-7 Urine Analysis

Parameters	Control	100 mg/kg	200 mg/kg	400 mg/kg
Colour	Yellow	Yellow	Yellow	Yellow
Transparency	Clear	Slightly turbid	Slightly cloudy	Slightly turbid
Specific gravity	1.010	1.010	1.010	1.010
PH	>7.2	>8.0	>8.0	>9.0
Protein	Nil	3+	3+	3+
Glucose	Nil	Nil	Nil	Nil
Bilirubin	-ve	-ve	-ve	-ve
Ketones	-ve	+ve	+ve	+ve
Blood	Absent	Absent	Absent	Absent
Urobilinogen	Normal	Abnormal	Abnormal	Abnormal
Pus cells	0-cells/HPF	1-cell/HPF	2-cells/HPF	1-cell/HPF
RBCs	Nil	Nil	0-1cells/HPF	Nil
Epithelial cells	Nil	1-cell/HPF	Nil	1-cell/HPF
Crystals	Nil	Nil	Nil	Nil
Casts	Nil	Nil	Nil	Nil
Others	Bacteria seen	Bacteria seen	Bacteria seen	Bacteria seen

Values are mean of 6 animals ± S.E.M. (Dunnett's test). *P<0.05; **P<0.01. *vs. control group*

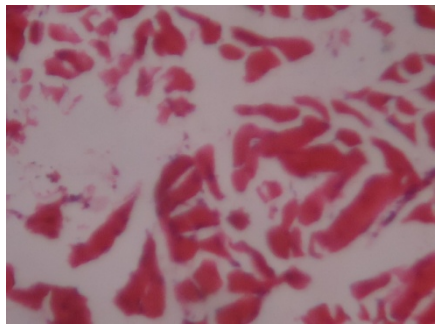
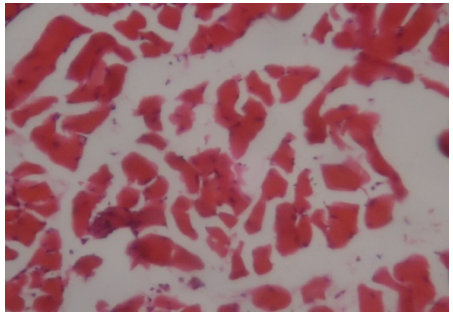
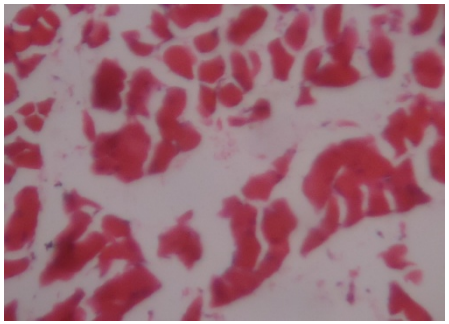
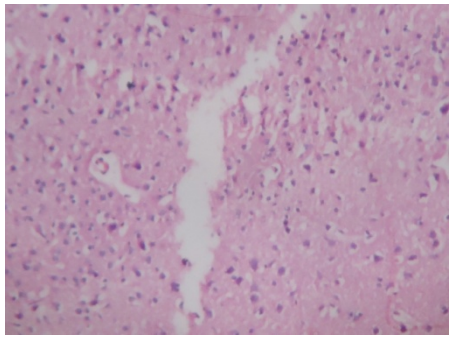
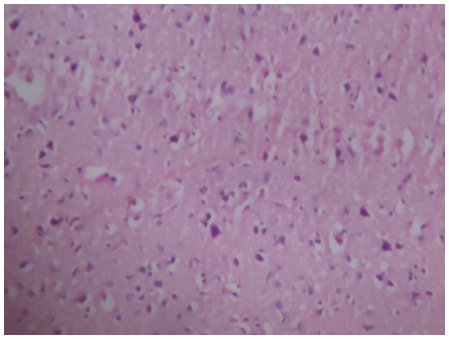
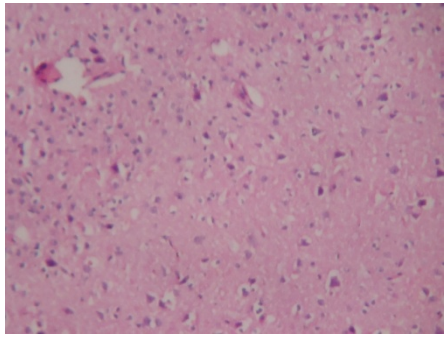
Table 8. Effect of oral administration of Lingathi Mathirai on organ weight

Dose (mg/kg)	Control	100 mg/kg	200 mg/kg	400 mg/kg
Heart(g)	0.60±0.06	0.57±0.05	0.56±0.07	0.55±0.06
Liver(g)	4.5±0.50	4.18±0.34	4.72±0.62	4.66±0.55
Lung(g)	0.72±0.04	0.65±0.07	0.70±0.05	0.68±0.05
Spleen(g)	0.61±0.14	0.66±0.04	0.70±0.05	0.68±0.05
Kidney(g)	1.22±0.3	1.28±0.03	1.27±0.3	1.34±0.04
Testis(g)	1.00±0.03	0.94±0.05	0.95±0.05	0.94±0.04
Ovary(g)	0.04±0.02	0.05±0.02	0.04±0.02	0.04±0.02
Brain	0.77±0.09	0.73±0.06	0.74±0.04	0.75±0.04
Pancreas	1.45±0.05	1.34±0.08	1.35±0.07	1.34±0.08
Uterus	0.72±0.05	0.75±0.06	0.74±0.06	0.72±0.04

Values are mean ± S.E.M. (Dunnet’t' test). $^{ns}P > 0.05$; Vs Control N=6.

DRUG OF LINGA MATHIRAI

HISTOPATHOLOGY

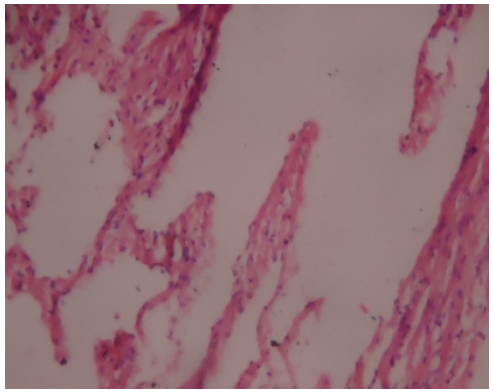
	100 mg	200 mg	400 mg
BONE			
BRAIN			

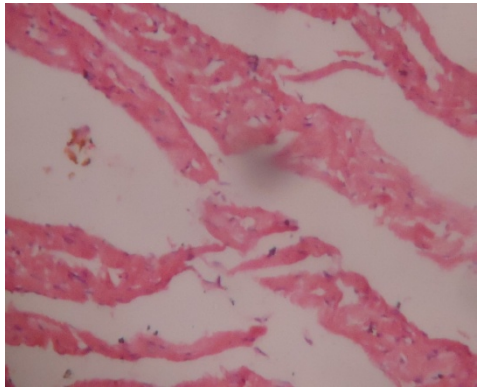
100 mg

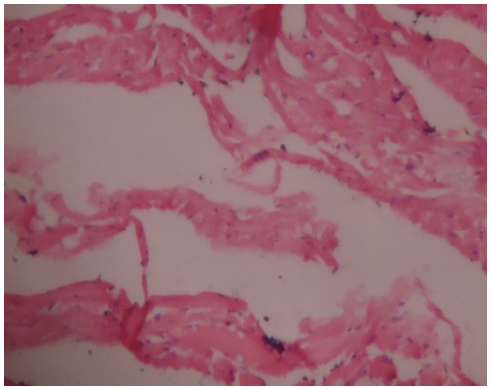
200 mg

400 mg

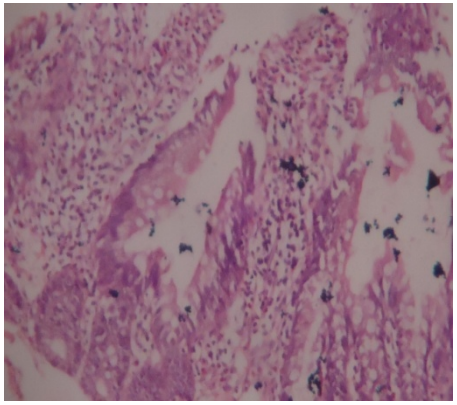
HEART

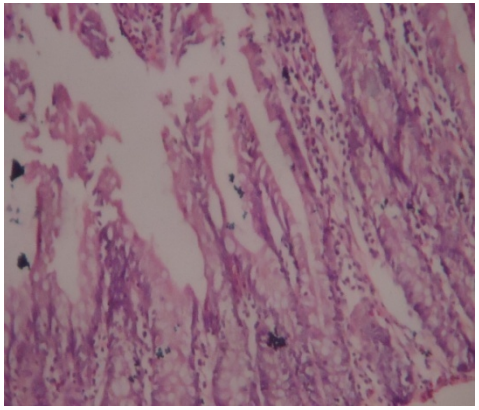


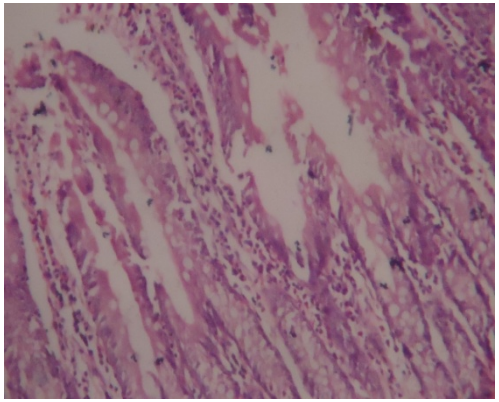




INTESTIN





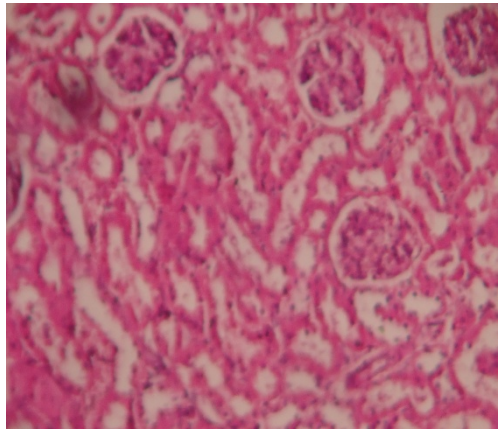


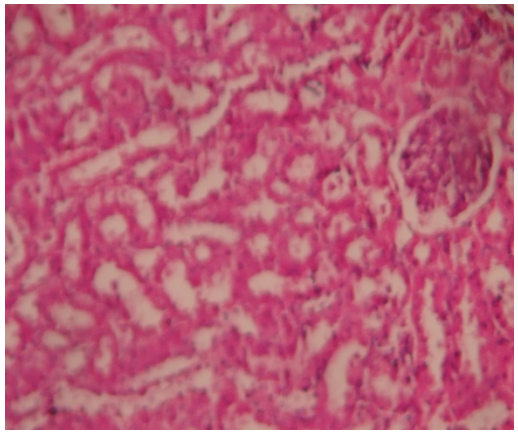
100 mg

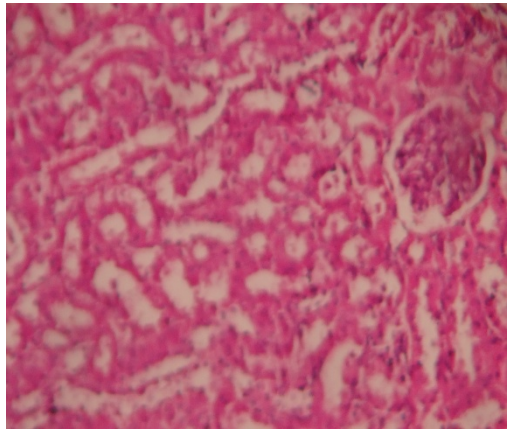
200 mg

400 mg

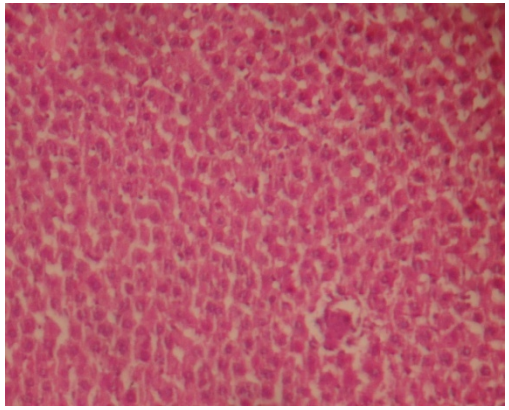
KIDNEY

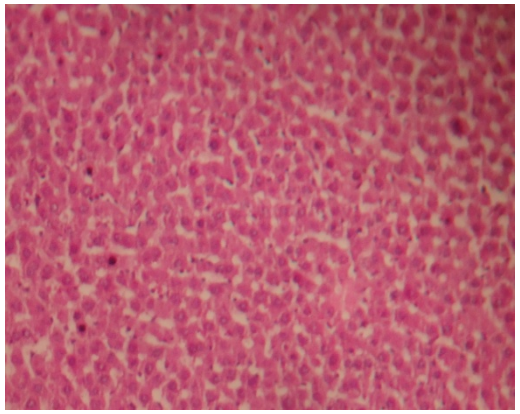


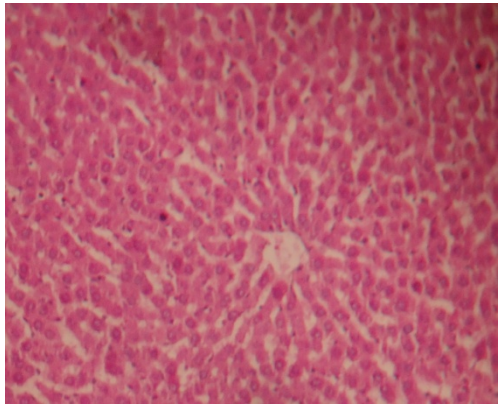




LIVER







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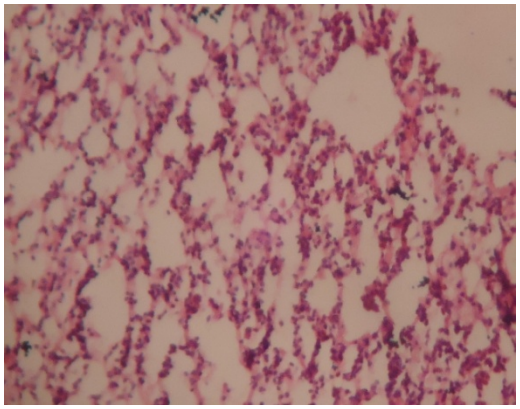
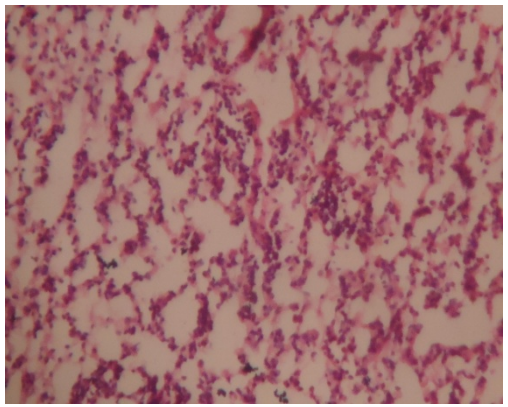
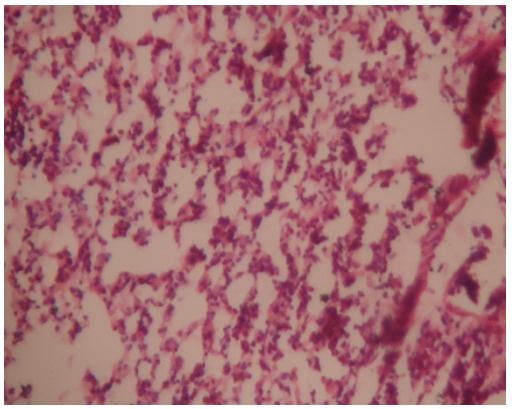
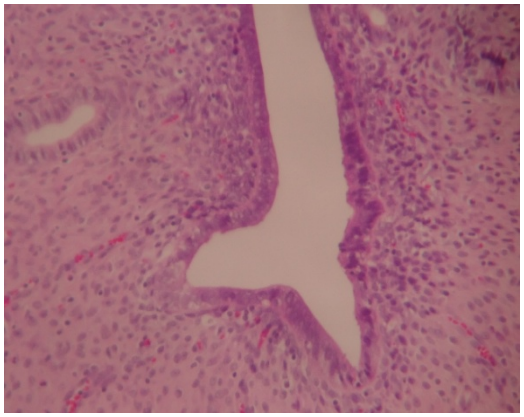
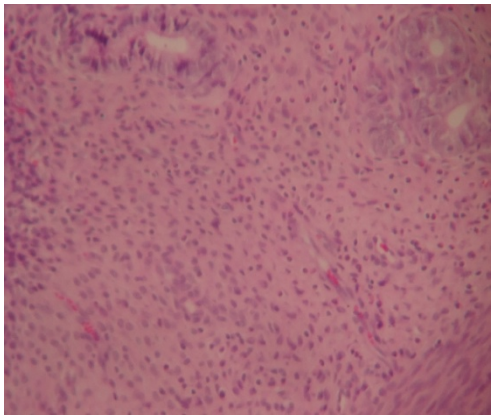
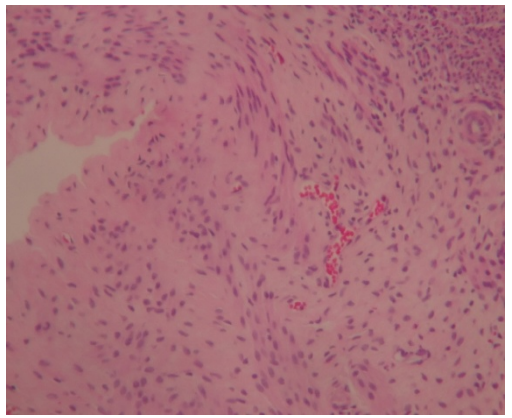
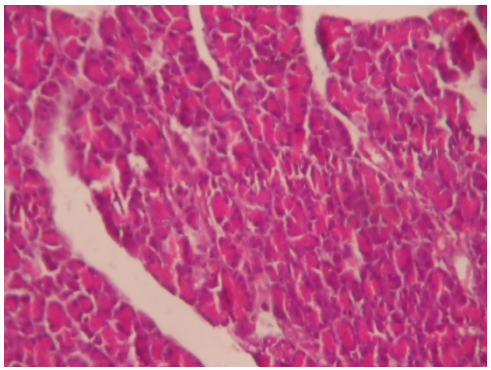
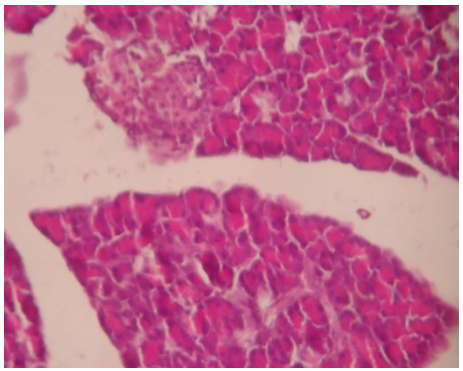
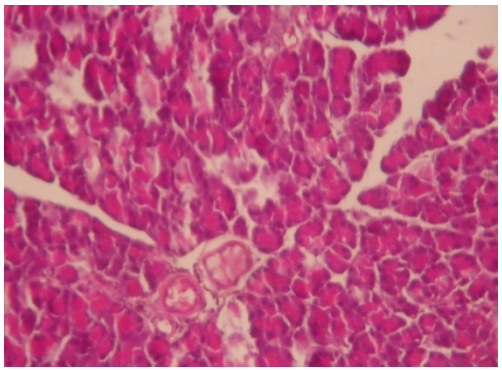
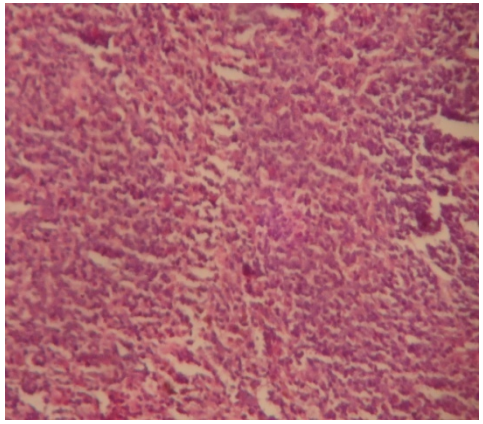
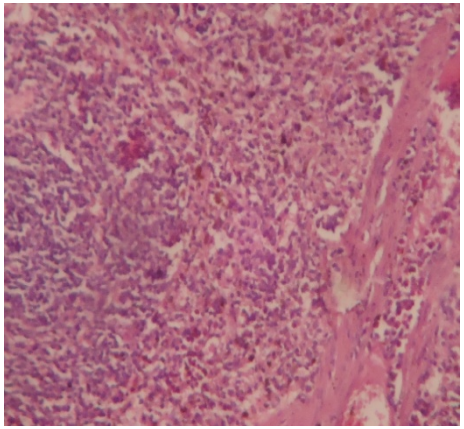
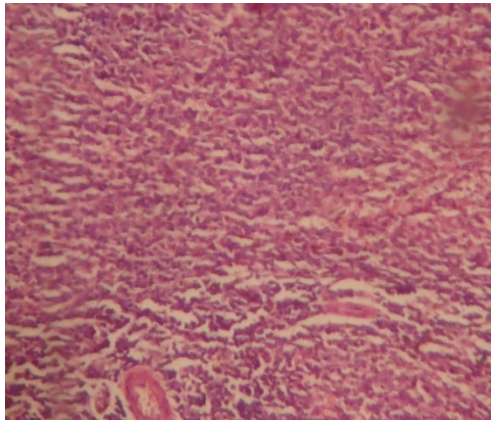
LUNG			
OVARY			

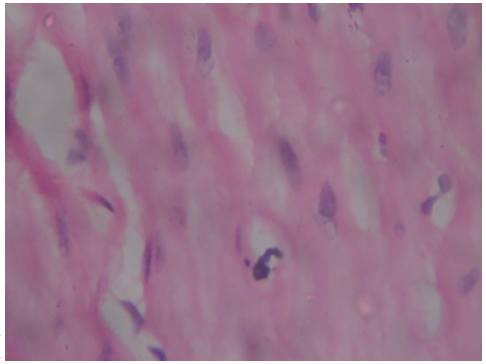
	100 mg	200 mg	400 mg
PANCREASE			
SPLEEN			

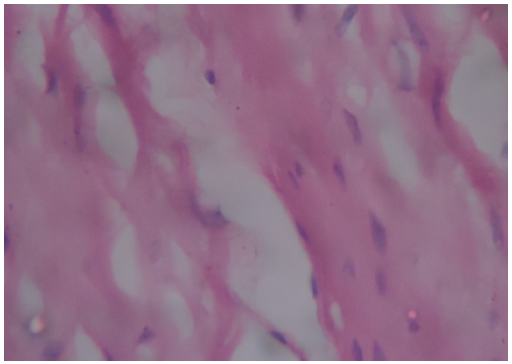
100 mg

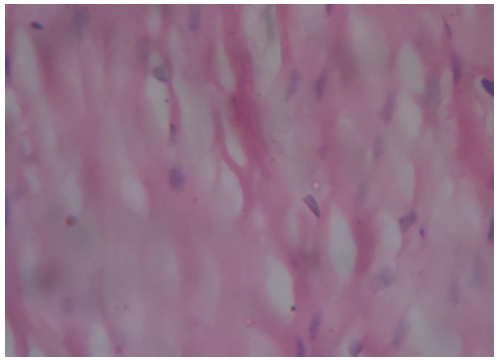
200 mg

400 mg

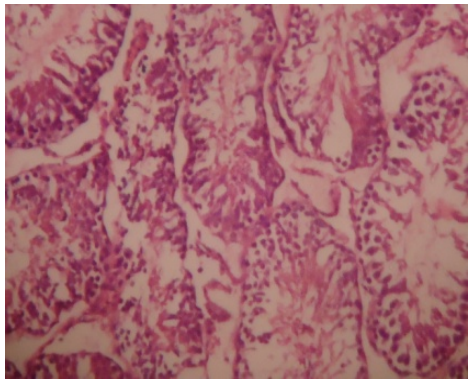
STOMACH

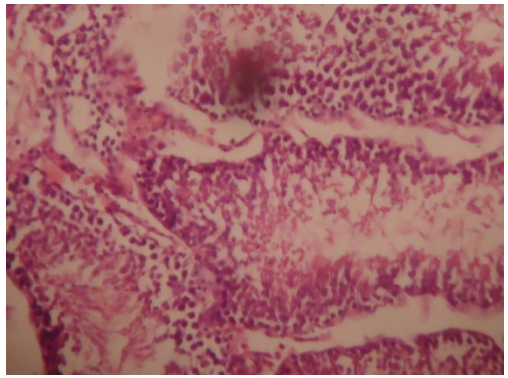


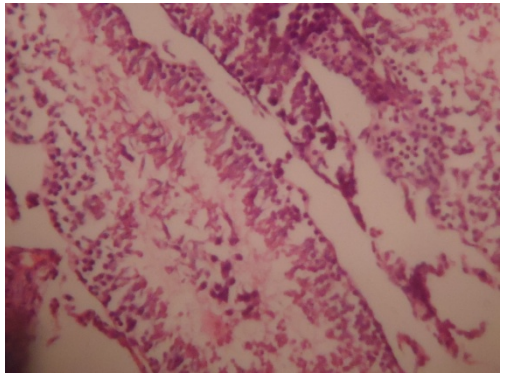




TESTIS







Pharmacological study

EVALUATION OF ANTIHISTAMINIC AND BRONCHODILATOR ACTIVITY OF LINGATHI MATHIRAI

INTRODUCTION

Allergy is one of the common diseases that affect mankind with diverse manifestations. The prevalence of allergy and asthma has risen in the recent years despite an improvement in the general health of the population. Allergic diseases are responsible for significant morbidity and have severe economic impact. Various epidemiological studies have identified the causes for an increase in the prevalence of upper and lower respiratory tract allergic diseases. Some of the postulated reasons are increasing environmental pollution and increased predisposition of individuals producing excessive IgE through a major change in the gene pool, changing lifestyles, and an increasing awareness of the disorders. Intensive research during the last several decades has highlighted the role of lymphocytes, immunoglobulins, mast cells, and various autacoids in the etiopathogenesis of allergic conditions.

In the present study, guinea pigs were used because of the extreme sensitivity of their airways to the primary mediators of bronchoconstriction, including histamine and leukotrienes and their ability to be sensitized to foreign proteins. Although there are various model of asthma, guinea pig airways react to histamine, acetylcholine, leukotrienes and other bronchoconstrictors in a manner similar to that seen in humans. Another similarity between the guinea pig model and asthmatic patients is that enhanced bronchoconstriction occurs in both species following sensitization, in response to β-adrenergic antagonists. Thus, the guinea pig model resembles the human allergic pathology in several aspects, especially in terms of mediator release. Histamine antagonists can be conveniently recognized and assayed by their ability to protect guinea pigs against lethal effects of histamine-induced bronchospasm.

As a public health problem, asthma is an important allergic disorder. The incidence is on rise all over the world. Globally 18,000 deaths occur per year due to asthma. Many anti-asthmatic agents such as mast cell stabilizer, leukotriene antagonist, corticosteroids etc are available for the treatment of asthma, but these synthetic agents are associated with drawbacks such as high

cost, inaccessibility and untoward effects. These factors have contributed to the recent increase in the use of traditional based medicinal products.

Drug development for asthma has been directed at improving existing agents and expanding new modalities that target the Th2 allergic cascade. In the hope that Lingathi Mathirai can be a better therapeutic agent for the treatment of asthma with less or no side effects we aimed at evaluating the potency in asthma management using animal models.

MATERIALS AND METHODS

DRUGS AND STOCK SOLUTION

Drugs used were Histamine diphosphate (Sigma Chemical, USA) and Promethazine hydrochloride (Rhone – Poulenc, Mumbai). Histamine dihydrochloride was dissolved in distilled water and desired concentrations were prepared. The test drug Lingathi Mathirai concentration was 100microgram per ml prepared by suspending with 2% CMC and then the volume was adjusted to 10 ml with normal saline for making the concentration of 100 µg/ml.in distilled water.

Animals

Male albino guinea pig weighing 350– 400g was kept in fasting condition 18 hours prior to commencement of experiment and given water ad libitum. It was housed under standard laboratory conditions of temperature (25 ± 2°C) and 12/12 hr light/dark cycle and then sacrificed by a blow to the head and exsanguinated as per CPCSEA recommended guidelines.(

In-vitro antihistaminic study

Guinea pig was sacrificed and a segment from ileum (2 cm) was dissected from the terminal ileum and mounted in an organ bath containing Tyrode solution (10 ml) between two stainless steel hooks under 0.5 to 1 g initial tension. The lower hook was fixed at the bottom of the organ bath and upper one was connected to an isotonic transducer. The Tyrode solution composition (pH 7.4) was (concentration in gm/lit.) NaCl 8.0, KCl 0.2, $CaCl_2$ 0.2, $MgCl_2$ 0.1, $NaHCO_3$ 1.0, NaH_2PO_4 0.05, and Glucose 1.0gm/liter. It was continuously aerated and maintained at 37 ± 0.5ºC The equilibrium period was

60 min and the bath solution was refreshed every 15 min. After equilibrium period, a dose response curve for histamine in variant molar concentrations, by maintaining 45 min time cycle.

BRONCHODILATOR STUDY

Animals were divided into four groups of six animals each. Each animal were served as its own control. Animals belonging to each group were subjected to a histamine aerosol (0.2% Histamine diphosphate in saline) using a glass nebuliser for 2 sec in an airtight Perspex chamber. Aerosolization of the solution was achieved via a compressed air line operating at a pressure of 8 Psi and a flow rate of 5ml/min. After exposure to the histamine aerosol, the animal showed signs of immediate immobilization and bouts of coughing. This was followed by shallow breathing symptoms, after which the animal collapsed, fell on its back and convulsed. The time taken by the animal to fall on its back after exposure to the aerosol was designated as the exposition time. The exposition time for each animal in all the four groups was noted.

Once the animal fell on its back, it was immediately taken out of the chamber and exposed to fresh air where the animal returned back to normal. After 1 hour the animals in the first three groups were administered orally 100, 200 and 400 mg/kg p.o, of Lingathi Mathirai respectively. While the fourth group of animals received 300µg/kg of Promethazine by oral route. One hour later, the animals were reexposed to the aerosol and exposition time for each animal was noted. The difference in the exposition time before and after Lingathi Mathirai administration was taken as a measure of the protective effect. Percent protection afforded by the Lingathi Mathirai was calculated by the formula.

$$\text{Percentage Protection} = \frac{Eta - Etb}{Etb} \times 100$$

Where ‘Eta’ is the mean exposition time after treatment with extract and ‘Etb’ is the mean exposition time before treatment with extract.

Statistical Analysis

Ileum contractions induced by agonist were assumed as 100% and reductions induced by test drug calculated. Percentage of ileum contraction was expressed as mean ± SEM. Results were analyzed using one-way analysis of variance (ANOVA). Probability value less than 0.05 were considered as significant

RESULTS AND DISCUSSION

No animals died during the acute toxicity test, nor were any adverse effects detected in animals treated with Lingathi mathirai at 2000mg/kg. This indicates that the drug is nearly nontoxic in mice up to an oral dose of 2.0 g/kg of body weight. One by twentieth, one tenth and one fifth of dose was selected from acute toxicity study and administered to animals.

Histamine when inhaled has been shown to induce bronchoconstriction by direct H_1-receptor activation and also by a naturally mediated bronchoconstrictor effect via vagal reflexes results in preconvulsive dyspnea and it also may lead to the appearance of convulsions. In the present study of Lingathi Mathirai have been shown the significant increase in pre-convulsion time due to pre-treatment with Lingathi Mathirai at the dose of 100, 200 and 500mg/kg of body weight of guinea pigs, when the guinea pigs were exposed to histamine.

The percentage protection of Lingathi Mathirai -100, 200, 500mg/kg is 27.43, 28.79, 29.83% and standard drug showed 50.31% respectively. The guinea pigs exposed to histamine aerosol showed signs of progressive dyspnoea leading to convulsions. The results presented here confirm the traditional claim that lingathi Mathirai confer some protection on guinea-pigs against the effects of a histamine aerosol. The immediate protection is not statistically significant but later extended, however the protection is not prolonged. Under the conditions employed, Lingathi Mathirai was found to possess moderate antihistaminic activity.

CONCLUSION

The results of present study suggested that Lingathi Mathirai significantly protected the Guinea pigs against histamine-induced bronchospasm. The traditional use of Lingathi Mathirai is substantiated in the management of asthma. The Lingathi Mathirai at moderate dose level significantly prolonged the latent period of convulsions as compared to control following the exposure of histamine aerosol. The action started after 90minutes of drug administration. Thus, our findings suggest that Lingathi Mathirai possess significant antihistaminic activity.

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Table-1: Effect of Lingathi Mathirai on isolated Guinea pig ileum preparation

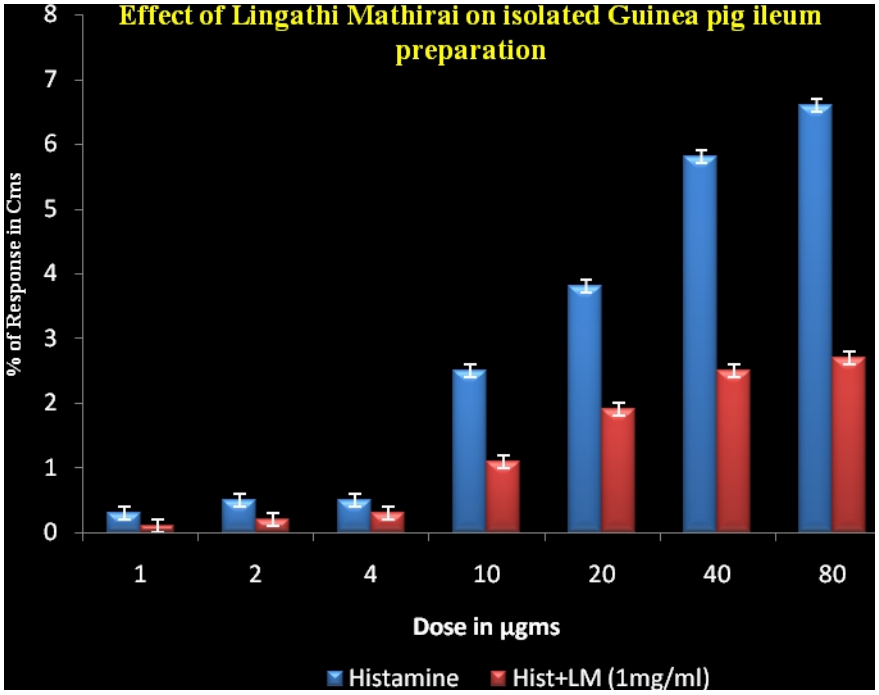
Sr. No	Dose of Histamine (µg/ml)	Percent of maximum response	
		Histamine alone	Histamine+Lingathi Mathirai (1mg/ml)
1	1	0.3±0.04	0.10±0.01
2	2	0.5±0.04	0.2±0.02
3	4	0.5±0.03	0.3±0.26
4	10	2.5±0.82	1.1±0.30
5	20	3.8±0.96	1.9±0.55
6	40	5.8±1.02	2.5±0.72
7	80	6.6±1.11	2.7±0.81

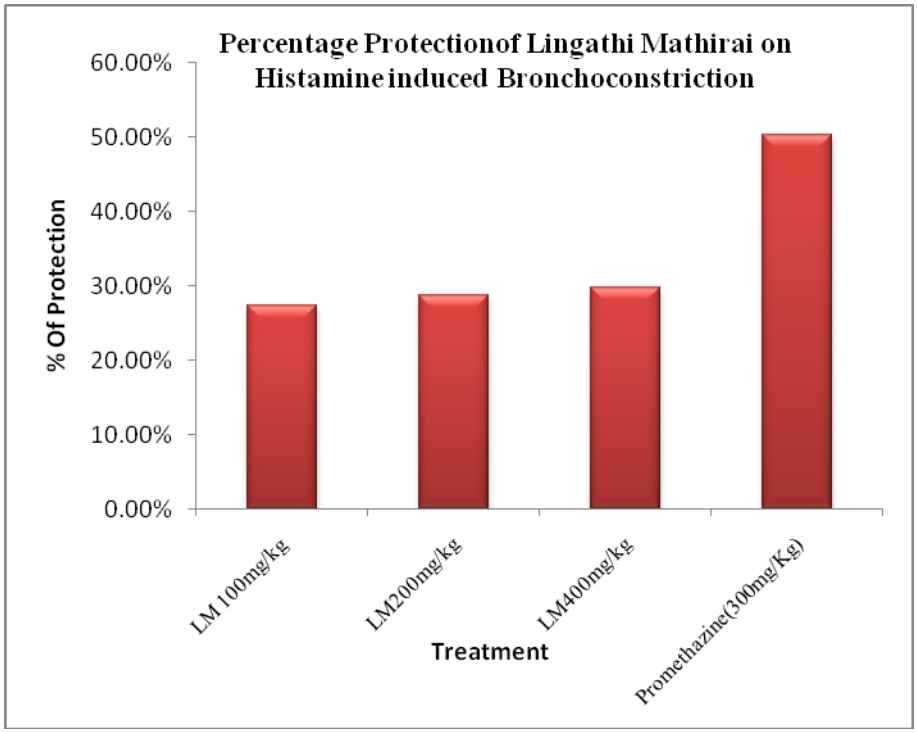
Values are expressed in mean ± SEM, *p< 0.05 compared with histamine induced contraction (45mm as 100%); n=3.

Table-2: Bronchodilator effect of *Lingathi Mathirai* on Histamine induced Bronchoconstriction.

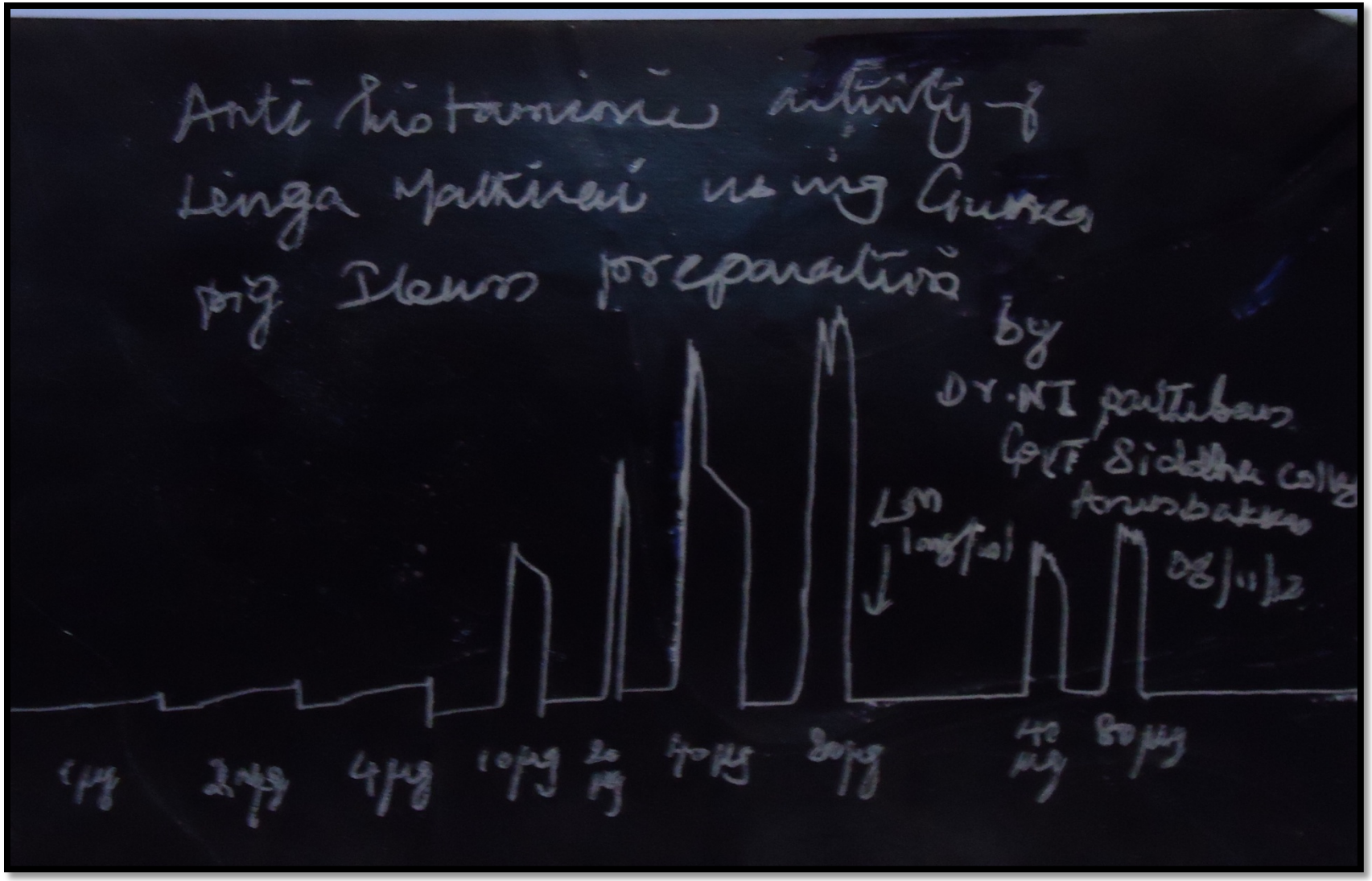
Treatment	Pre-Treatment Exposition in seconds	Post-Treatment Exposition in seconds	Percentage Protection
Lingathi Mathirai 100mg/kg. p.o.	88.02 ±3.65	121.30±3.72**	27.43%
Lingathi Mathirai 200mg/kg. p.o.	91.24±3.00	128.13±4.98**	28.79%
Lingathi Mathirai 400mg/kg. p.o.	95.11±3.45	135.56±5.45**	29.83%
Promethazine (300mg/kg, p.o)	89.15±3.15	179.44±6.10**	50.31%

N=6; Values are expressed as mean ± SEM; *Significant between pre and post treatment time (Student's –'t') **P<0.01.


Effect of Lingathi Mathirai on isolated Guinea pig ileum preparation
% of Response in Cms
0
1
2
3
4
5
6
7
8
1
2
4
10
20
40
80
Dose in µgms
Histamine
Hist+LM (1mg/ml)


Percentage Protectionof Lingathi Mathirai on Histamine induced Bronchoconstriction
% Of Protection
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
LM 100mg/kg
LM200mg/kg
LM400mg/kg
Promethazine(300mg/Kg)
Treatment

ANTI HISTAMIN ACTIVITY OF LINGA MATHIRAI



Bio statistical Analysis

BIO STATISTICAL ANALYSIS

Treatment for Swasa Kasam

The most popular statistical tool, namely, Fisher's Exact Test analysis has been employed to analyses the effectiveness with the help of a hypothesis.

Hypothesis

There is no reducing symptoms among the patients for the treatment of Swasa Kasam.

Symptoms	Number of Cases	
	Reduced	**Not Reduced**
Dyspnoea, Wheezing	14 70%	6 30%
Cough with Expectoration	11 84.6%	2 15.4%
Sneezing, Rhinitis	5 71.4%	2 28.6%

Software: spss17 version

Number of cases: 40

Test: Fisher's Exact test

Confidence Interval: 95%

Result:

P Value (2 tailed): $p<0.01$

Inference:

Since the p value is significant (<o.o1), The hypothesis is not accepted. So there is significant reduced symptoms among the patients for the treatment of Swasa kasam. Hence it is concluded that the treatment was effective and significant.

Consent form

CONSENT FORM

I certify that I have disclosed all the details about the study in the terms readily understood by the patient.

DATE: **SIGNATURE**

NAME

CONSENT BY THE PATIENT

I have been informed to my satisfaction by the attending physician the purpose of the clinical trial and the nature of the drug treatment and follow up including the lab investigations to be performed to monitor and safeguard my body functions.

I am aware of my right to opt out of the trial at any time during the course of the trial without having to give reasons for doing so.

I exercising my free power of choice, hereby give my consent to be included as a subject in the clinical trial of **LINGA MATHIRAI** for the treatment of **SWASA KASAM.**

DATE: **SIGNATURE**

NAME

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_____, Åºŧì Ì õ þ¼õ) ±ý ÍÂ ¿ŧ¨ É×¼ý ±Ø¾ì ¦¸¡ Î ì Ì õ ´ôÒ¾ø ÀÊÅõ.

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þó¾ ¬Ã¡öîºÂŧý §¿¡ì¸õ, ÁÕòÐÅõ ¦ºöÔõ Ó¨È, ¦¾¡¼÷¸ ñ¸¡½ŧôÒ ÁüÚõ ±ý ¯¼ø¿Äõ ÌÈŧò¾ ÁÕòÐÅ À¡§º¡¾¨ É¸¨ Çô ÀüÈŧÂ Åŧ¡Å¡É ÅŧÇì¸õ ±Éì Ì ÁÕòÐÅõ ¦ºöÔõ ÁÕòÐÅ÷ ãÄõ ¦¾Çŧ×À Î ò¾ôÀð Î ûÇÐ. þó¾ ¬Ã¡öîºÂŧø Àí Ì ¦¸¡û Ùõ ±ý ºõÁ¾ò¾üÌ Â¡Õ¨¼Â ¿ŧ÷Àó¾Óõ ¸¡Ã½Áŧø¨Ä ±ýÀ¨¾ ¦¾¡ŧÅŧòÐì¦¸¡û¸§Èý.

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Case sheet proforma

CASE SHEET
POST GRADUATE DEPARTMENT - BRANCH-I
(POTHU) MARUTHUVAM
GOVT. SIDDHA MEDICAL COLLEGE & ANNA HOSPITAL, CHENNAI-106.

CASE SHEET PROFORMA FOR "SWASAKAASAM"

WARD NO.	:	NATIONALITY	:
I.P. NO	:	RELIGION	:
BED NO	:	OCCUPATION	:
NAME	:	INCOME	:
AGE	:	D.O.A	:
SEX	:	D.OD	:
PERMANENT ADDRESS :			
		DIAGNOSIS	:
TEMPORARY ADDRESS: Govt. Siddha Medical College & Anna Hospital, Chennai – 106.		MEDICAL OFFICER	:

COMPLAINTS AND DURATION :

HISTORY OF PRESENT ILLNESS :

HISTORY OF PAST ILLNESS :

PERSONAL HISTORY & HABITS:

A. Food	:	Veg	Non veg
B. Marital status	:	single	married
C. Duration of married life	:		

FAMILY HISTORY

GENERAL EXAMINATION:

1.	Physical build	:	lean	normal	obese
2.	Height (cm)	:			
3.	Weight(kg)	:			:
4.	Pulse rate	:			
5.	Heart rate	:			
6.	Respiratory rate	:			
7.	Blood pressure	:			
8.	Pallor	:			
9.	Cyanosis	:			
10.	Jaundice	:			
11.	Clubbing	:			
12.	Pedal oedema	:			
13.	JVP				

EXAMINATION OF VITAL ORGANS

- **CVS** :
- **CNS** :
- **Respiratory system** :
- **Digestive system** :
- **Urogenital system** :

SIDDHA ASPECTS

Yaakai (udal nilai)		Mukkunam
1.	Vatham	1. Sathuva gunam
2.	Pitham	2. Raasatha gunam
3.	Kapham	3. Thamo gunam
4.	Kalappu	

PARUVA KAALAM (SEASONS)	NILAM (PLACES)
1. Kaar Kaalam (Aavani-Puratasi) Aug-sept.	1.Kurinchi (Hills Areas)
2. Koothir Kaalam (Iypasi-Karthigai) Oct-Nov.	2.Mullai (Forest Areas)

3. Munpani Kaalam (Maargazhi-Thai) Dec-Jan.	3.Marudham (Fertile Areas)
4. Elavenil Kaalam (Chithirai-Vaikasi) Apr-May	4.Neithal (Sea Areas)
5. Mudhuvenil Kaalam (Aani-Aadi) Jun-Jul	5.Paalai (Desert Areas)

IYAMPORIGAL/PULANGAL KANMAVIDAYAM	**KANMENTHIRIYAM /**
1. Mei (Sensation)	1.Kai [Koduthal]
2. Vaai (Taste)	2.Kaal [Nadathal]
3. Kann (Vision)	3.Vaai [Pesal]
4. Mooku(Smell)	4.Eruvai [Malam Kazhithal]
5. Sevi (Hearing)	5.Karuvai [Aananthithal]

MUMMALAM

1. Malam
2. Moothiram
3. Viyaravai

UYIR THATHUKKAL:

Vatham:

1. Pranan
2. Abanan
3. Viyanan
4. Udhanan
5. Samanan
6. Naagan
7. Koorman
8. Kirukaran
9. Devadathan
10. Dhananjeyan

PITHAM:	**KAPHAM:**
1. Anal Pitham	1. Avalambagam
2. Ranjaga Pitham	2. Kledagam
3. Saadhaga Pitham	3. Podhagam
4. Aalosaga Pitham	4. Tharpagam
1. Prasaga Pitham	5. Santhigam

UDAL THATHUKKAL:

1. Saaram
2. Senneer
3. Oon
4. Kozhuppu
5. Enbu
6. Moolai
7. Sukkilam / Suronitham

Envagai Thervu:

1. Naa -
2. Niram

3. Mozhi -
4. Vizhi -
5. Sparisam
6. Malam
    a. Niram
    b. Nurai
    c. Erugal
    d. Elagal
7. Moothiram
    a. Neerkuri
        1. Niram
        2. Edai
        3. Manam
        4. Nurai
        5. Enjal
    b. Neikuri
8. Naadi

SIGNS AND SYMPTOMS

	PRESENT	**ABSENT**
1. Dyspnea		
2. Cough & expectoration		
3. Tightness of chest		
4. Rhinitis		
5. Sneezing		
6. Fever		
7. Headache		
8. Cyanosis		
9. Clubbing		
10. Loss of weight		

Assessment	Before Treatment	After Treatment			
		I	II	III	IV
1. Dyspnea					
2. Cough & expectoration					
3. Tightness of chest					
4. Rhinitis 5. Sneezing					
6. Fever					
7. Headache					
8. Cyanosis					
9. Clubbing					
10. Loss of weight					

LABORTORY INVESTIGATIONS:

BT **AT**

1.Blood Tc
Dc
ESR
Hb
Bl-sugar (R)
Bl.Urea
Sr.Cholesterol
Sr.Creatinine
Sputum for AFB
Mantoux test

2.Urine - alb
Sug
Dep

3.X-ray Chest PA View

DRUG: : LINGATHI MAATHIRAI:
Dose: : 130mg, tid.

Anubanam: water

Duration of treatment: 48 days.

Pathiam (Do's and Don'ts)

Prognosis at the end of the treatment

Medical Officer Signature: **H.O.D**

Bibliography

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